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United States  
Circuit Court of Appeals

For the Ninth Circuit.

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Transcript of Record.  
(IN FOUR VOLUMES)

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LOUIS MASON, L. O. CLARK, JOHANNA  
FARLIN, C. C. CLARK, L. P. FORES-  
TELL, A. F. BUSHNELL, JOHN DOLAN,  
PAT LEROUS, J. T. FITZGERALD, and  
ELIZABETH BROWN,

Appellants,

vs.

WASHINGTON-BUTTE MINING COMPANY,  
a Corporation,

Appellee.

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VOLUME II.  
(Pages 385 to 832, Inclusive.)

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Upon Appeal from the United States District Court for  
the District of Montana.

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DEC 4 - 1913



No. 2323

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(Testimony of William Mayger.)

Redirect Examination.

(By Mr. NOLAN.)

The WITNESS.—Evidently there are two different kinds of material in Complainant's Exhibit 25. One is a material, as I should judge from the sample, that is filling for a fissure, and the other is a mineralized material on a slip of that fissure. This shows breccia, and if it was not in a fissure it would not be breccia. So likewise, Complainant's Exhibit 26 shows different kinds of materials. I think they both came within fissures. Also Complainant's Exhibit 27 shows seemingly two kinds of material to the naked eye. One portion is a mineral that is formed on a slip within a fissure, and attached to the wall of the fissure, to that slip.

I said that the other conditions surrounding, if I saw that rock in place, that I could not tell the character of the rock simply by looking at a piece that was not in place. I believe in my mind that all three of those pieces came from a fissure, and if that was the case, there would be ample reason why I should start a shaft to further develop. As a matter of fact, if I saw either one of those samples 25, 26 or 27 in a fissure, in place, the mineralization would certainly be such as to justify me in making the location.

Q. Calling your attention to Defendants' Exhibit No. 6, which you say is quartz,—and you were asked by counsel as to the interlocking of crystals, or as to the existence of crystals separate, in the case of granite and as in the case of quartz, regardless of the fact as to the condition of the crystals in the piece I

(Testimony of William Mayger.)

show you, what do you say as to whether or not that is the character of quartz so treated by miners, that is generally recognized in the location of mining claims?

A. Undoubtedly, without any question at all, the miner would call it quartz.

[292] Q. Take it in the location of mining quartz claims,—what do you say as to whether the practice generally prevails before a location is perfected of having some geologist analyze the rock?

By Judge BOURQUIN.—Objected to, first, that it is not proper redirect, and second, it is leading, incompetent.

A. I would say they would not do anything of the kind simply to make a location.

Q. And what do you say as to whether or not in connection with the location of mining claims, extending over the period of your experience, whether it is customary or not to have rocks analyzed, so as to determine their composition before locations are made?

By Judge BOURQUIN.—Like objection.

A. No, sir.

Recross-examination.

(By Judge BOURQUIN.)

The WITNESS.—I have known many prospectors in the west; they have been, so far as the west is concerned, we may say, the salt of the earth. They have opened up and made this country. I should judge the successful ones are few as compared with the whole. There are numerous prospects around my own district, Marysville, possibly that are good mines, but

(Testimony of William Mayger.)

undeveloped, and the value of these mines will never be known until they are developed. The condition at present is that the proportion of quartz locations that have made paying mines is very low as compared to the innumerable locations that prospectors have made. I will not say that is true because what the prospector thought he had and expected it to lead to did not materialize; it has not so far. I think the abandoned claims over the West, depends on whether they find anything in them or not.

Redirect Examination.

(By Mr. NOLAN.)

The WITNESS.—I do not think I ever knew a prospector yet who did not harbor the idea that his mining claim would be a bonanza. I do not think the location of mining claims or the validity of them is dependent upon the fact that they will be a paying mine. As a matter of fact, [293] the contrary is the rule,—you are not required to develop a paying mine in order to make a valid location of a mining claim. My idea of what constitutes a valid location would be to discover rock in place, regardless as to the amount that was in the rock.

(Subscribed by the witness and sworn to before the master, January 8, 1912.)

[Testimony of **Evan P. Clark**, for Defendants  
(Recalled).]

EVAN P. CLARK, heretofore duly called and sworn as a witness on behalf of the defendants, being recalled, testified as follows:

Direct Examination.

(By General NOLAN.)

The WITNESS.—When I was on the stand before, in speaking of the disclosures on the north lead I commenced at shaft No. 1, and in speaking of the disclosures on the southerly lead, I confined my testimony to the conditions in the Mullins tunnel, and the discovery shaft south of it, the Hornet Discovery shaft.

In connection with the northerly lead on Defendants' Exhibit 1, I was out there this morning and went into other openings for the purpose of determining whether or not the lead extended westerly in its strike, beyond shaft No. 1. I also went into openings on the southerly lead, for the purpose of determining whether or not the lead that I encountered in the Hornet Discovery extended westerly.

Referring to the northerly lead, and especially to a shaft shown on the map as No. 21, I was in that this morning. That is about one hundred and ten feet deep. I also went into another opening easterly of that, and before you get to shaft No. 1; I think that is it marked 23 on the map, this side of tunnel No. 30.

Referring to this deep shaft, No. 21, the whole bottom of the shaft is in a fine quality of vein material.

(Testimony of Evan P. Clark.)

This vein material does not go up the shaft very far, is practically in the bottom, where it shows all around. At that point, *the was* must be all of a hundred feet up the shaft, so that there would be a depth of the shaft in the bottom of only ten feet. The material I found in the bottom is a nice ore-bearing material. I would call it quartz porphyry, and resembles the material you would find on Anaconda Hill here on the surface. It is in place there, everything that I could [294] see. I could only determine its strike by taking the line from the other shaft and the tunnel 31, that I was in. The walls are not exposed there. There is no doubt in my mind but what it is a vein, it is a nice quality of vein matter. I could not tell the values, but I should judge it would carry a trace of copper.

Referring to cut 23, that is about seventy-five feet east from shaft 21. I did not make any measurements. There is a lead there. Bedrock is very close to the surface there, ten or twelve feet. I could not tell the width of the lead in that opening; there are walls there,—what you might accept as wall,—but you could not see anything on the north side. The rock in there is quartz porphyry, iron stained, showing full of talc. That is strictly lead material. It is not country rock.

Q. Now, what do you say as to whether or not, in your judgment, the lead about which you spoke when you gave your testimony before, being the same lead or a different lead, exposed in opening 23 and in the deep shaft No. 21?

(Testimony of Evan P. Clark.)

By Judge BOURQUIN.—Objected to as mere speculation, calling for an idle guess on the part of the witness, incompetent.

A. It is one and the same vein.

The WITNESS.—I was in shaft designated on the map as 19 this morning. I was never in it before this morning. It is eighty or ninety feet deep; I could not say exactly. Probably ten feet, as nearly as I could judge, is in bedrock. There is a very fine vein material disclosed in that shaft; a lead there. When I say nice vein material I refer to the materials that are found between the walls of a vein or the capping that, in sinking through the wash, you would come to, right in the top of the vein. I think it carries traces of copper. It is full of nice, handsome streaks of clay, and it is quartz porphyry; it is a softer material than it is in the one hundred and ten foot shaft.

I went into tunnel 35. I encountered a lead there; it was about the same, only a little harder. This tunnel is about seventy-five feet east of shaft 19. The strike of the lead in the tunnel would be easterly and westerly. I could not tell from the appearance of the [295] lead in the shaft as to its strike. The bottom of the shaft is all in the walls of the vein, and you are not able to see the walls of the vein at all. The dip southerly, showed very plainly.

I went into tunnel No. 36. I found evidence of a vein there just like I found in tunnel 35 and shaft 19. There was enough of the vein material shown so that I was able to tell the strike of the lead; it is

(Testimony of Evan P. Clark.)

easterly and westerly; it dips to the south. That ended my examination there this morning.

Q. Now, what do you say, or what is your judgment, as to whether or not this lead that is disclosed in the Hornet tunnel is the same or a different lead from the lead that you encountered in tunnel 35 and in shaft 19.

Judge BOURQUIN.—Objected to as speculative, inviting a mere guess on the part of the witness, incompetent.

A. One and the same vein.

Cross-examination.

(By Judge BOURQUIN.)

The WITNESS.—I went out on the ground this morning at about 7:30 o'clock. I was there at ten. It is about three miles from here; I took the street-car. I went down the deep shafts by the ladders. In the one hundred and ten foot shaft I went down in a bucket. My brother was with me, no one else. Practically speaking shaft 21, on Defendants' Exhibit 1, had just reached bedrock; the bottom of the shaft was quartz porphyry. As a matter of fact, in all the shafts testified to by me, the material was very similar, just about all quartz porphyry, excepting the eighty or ninety foot shaft on the Hornet. It is more taley and softer; that is shaft 19. It was not county rock; it was all vein capping, outcrop. I do not think I found any walls to the vein in shaft 21 on either side of the shaft; there was nothing from which I could determine the strike, and my lining up those shafts 1 and 2, I arrived at my conclusion it

(Testimony of Evan P. Clark.)

is on the same vein. According to my judgment they were fortunate enough to sink right squarely on the vein, at a depth of one hundred and ten feet. This vein material in 21 I call lead filling. There was evidence of copper there, but very little. Oh, yes, [296] it would show a trace; not much more. I did not bring any samples from there. I did not see any evidence in shaft 21 of what is termed the Continental fault, running north and south through it.

I also went in shaft 23, about 75 to a hundred feet east of shaft 21. There the shaft was practically on the bedrock, probably five or six feet in the bedrock. It was probably fifteen feet deep. They had there done no cross-cutting on the surface, since it was wash, to discover the vein, and by the assistance of lining up, the vein was discovered. By lining up, I mean that all these points where I saw the north lead are very nearly in a line. It is from that I conclude it is the same vein. I did not see any walls in shaft 23. I did not see any evidence of the Continental or large north and south fault. Faults would not show where it is so close to the surface there; if you were down more into the solid, then you might find these little fractures, which run between the walls in the vein filling.

Q. The matter in shaft 23, was it loose, disintegrated, iron-stained material which you find on the bedrock of that section?

A. No, not all over that section. Within the walls of the vein I would call that nice vein capping.

The WITNESS.—I call it nice vein capping as it

(Testimony of Evan P. Clark.)

appears in shaft 23. I would not call it profitable ore; traces of mineral, iron, and I should judge traces of copper. This matter I saw in shafts 21, 32, 19, and tunnels 36 and 35 resembles the material in the veins in the north cross-cut of tunnel 31 and in the Hornet tunnel. It resembles it in that it is a quartz porphyry filling in the north cross-cut and tunnel 31, between the two narrow streaks it is a low grade quartz porphyry filling that the ore is made in there. I find quartz porphyry in the north cross-cut of tunnel 31, and that is what I found in shafts mentioned, not mineralized so much. Of course it would not be the same in different places.

I then went to shaft 19; it was eighty or ninety feet deep. I think the bottom of the shaft stopped about at bedrock. There were no cross-cuts on the surface to discover the vein. There again they were fortunate enough to strike right on top of the vein. They have a fine vein showing there. No walls. It was the quartz [297] porphyry like I saw in 21, and nice streaks of talc. There is not enough development work to determine the course of the streaks. The bottom of the shaft was not clear; there was quite a good deal of filling fell down in the bottom, of the same material. It was the outcrop, the vein filling that fell in. It was not wash; it is the vein capping that slid in, probably two or three feet down in the vein there. On the walls as they remained I could not see any evidence of a fault there; of course, I did not see the bottom of the shaft; that same condition did not exist so much in shafts

(Testimony of Evan P. Clark.)

21 and 23, that is a sloughing off of the sides. I believe shaft 21 was pretty fairly clean on the bottom. There was a good deal of debris in the bottom of 23; I should judge it had slid in. I did not see any walls in shaft 19 of a vein or lead; it was all vein material. I would expect to find traces of copper in this material in shaft 19. That was of quartz porphyry, but of a softer nature; lots of clay in it; what we call a nice kind of vein material which usually leads to pay ore.

I was in tunnel 35. That was excavated in wash for a ways. I do not recollect where I first encountered bedrock in that shaft. I think probably twelve or fifteen feet from the face. The face of the tunnel is the same quartz porphyry, and of a little harder nature than we found in the bottom of the shaft; it is what I call vein material. This quartz porphyry is what I call vein matter where I see it in the several shafts and tunnels. I believe it showed the granite pretty strong on the south side. I do not remember if I saw the granite on the north side. I think the granite was one wall of the tunnel. I determined the strike of this quartz porphyry vein material from that somewhat; found it easterly and westerly. They must have run a hundred and twenty-five feet before they struck bedrock. That tunnel goes in like that,—dipping in. They must have wheeled up hill there. I could not give you an idea about how deep the face of that tunnel would be below the surface. And in that distance again they were fortunate enough to strike the vein as they encountered bed-

(Testimony of Evan P. Clark.)

rock; they are enabled to do that by the other development work.

I went in tunnel 36. I found the same material,—quartz porphyry [298] as in shaft 21 and 23 and tunnel 35 and 19. The walls were pretty strong on the right-hand side. The tunnel cut the vein about forty feet in; followed the vein about thirty feet to a little north cross-cut showing about fifteen feet of nice outcrop of vein material,—all vein material,—upon the north side,—into the face. Where it branches to the right and left, I found the vein material all on the north side. And I would class it as the best looking wall rock that I have seen on the Butte and Boston placer, on the south side. In other words, I found the best defined wall rock in tunnel 36. It answers all the purposes of a wall; the vein material lay on the north side of it. The country rock that composed that south wall is granite. The back of the tunnel is in the bedrock at the face.

Q. Did you see any faulting in that tunnel 36?

A. No, sir; well, when I make that remark, there may be faults there,—what you term faults,—but with all due respect to these faults, I do not recognize them much when I pass on to anything of that kind, or am mining. If a vein contains faults and is still full of marketable ore, it don't make any difference to me what you call it, faults or otherwise, I do not notice it.

The WITNESS.—Generally faults cut no ice in mining. We determine which way the fault has gone, and project our drift and find our ore again in

(Testimony of Evan P. Clark.)

place at the end of the fault. I did not find in tunnel 36 any of this green copper that has been called chrysocolla and the other copper they have called cuprite. It was just iron-stained, rusty, oxidized material.

I was not in tunnel 37 that I know of. I was out there this morning looking for the extensions of the Hornet vein. I don't think any one called my attention to that tunnel. Mr. Clark was with me, and he showed me anything that would enlighten me on the matter I think.

(Subscribed by the witness and sworn to before the master January 6, 1912.)

By Mr. NOLAN.—I desire to offer in evidence a deed from Louis Mason and Anna Mason, and R. O. Merriman and Rachel A. Merriman, to L. O. Clark, of an undivided five-eighths interest in [299] and to the following described mining properties: an undivided  $\frac{5}{8}$  interest in the Gulf; an undivided  $\frac{5}{8}$  interest in the Hope; an undivided  $\frac{5}{8}$  interest in the Olivia; an undivided  $\frac{5}{8}$  interest in the Rabbit, and an undivided  $\frac{5}{8}$  interest in that certain instrument of writing and lease and bond for the purchase of the Hornet quartz lode claim, which said lease and bond was executed May 2, 1890, from Isaac Knoyle to Samuel Kift and lessors, and running to the said Louis Mason and R. O. Merriman, as lessees, being the intention to convey by these presents an undivided  $\frac{5}{8}$  interest in all of the right and title which now vests, or may hereafter accrue to the said Louis Mason and R. O. Merriman of, in or to that certain quartz lode mining claim known as the Hornet, by

virtue of the said bond referred to.

The EXAMINER.—I will mark that Defendants' Exhibit No. 61.

Mr. SHELTON.—I wish to put in the general objection that it is incompetent, irrelevant and immaterial.

General NOLAN.—I desire to offer in evidence the record of a deed from L. O. Clark and Clinton C. Clark, her husband, to Mary E. Connolly, of an undivided one-eighth interest in the Gulf, Hope, Olivia and Rabbit quartz lode mining claims, and an undivided one-eighth interest in the lease and bond for the purchase of the Hornet referred to in the deed from Merriman and Mason to Clark.

Mr. SHELTON.—We object to that on the ground that it is incompetent, irrelevant and immaterial.

(Thereupon the said instrument was read into the record as follows:)

This indenture made the 11th day of March, 1901, between L. O. Clark and Clinton C. Clark, her husband, of the city of Butte, County of Silver Bow, Montana, parties of the first part, and Mary E. Connolly, of the same place, party of the second part, Witnesseth:

That the said parties of the first part for and in consideration of the sum of one dollar, lawful money of the United States, to them in hand paid by the party of the second part, the receipt of which is hereby acknowledged, and certain other valuable considerations contained in a separate agreement of even date herewith, do by [300] these presents

grant, bargain, sell, remise, release and forever quit-claim unto the said party of the second part, and to her heirs and assigns forever, an undivided one-eighth interest of, in and to the following described mining properties, to wit: An undivided  $\frac{1}{8}$  interest in the Gulf quartz lode mining claim; an undivided  $\frac{1}{8}$  interest in the Hope quartz lode mining claim; an undivided  $\frac{1}{8}$  interest in the Olivia quartz lode mining claims; and an undivided  $\frac{1}{8}$  interest of in and to the Rabbit quartz lode mining claim, and an undivided  $\frac{1}{8}$  interest in and to a certain agreement in writing and lease and bond for the purchase of that certain quartz lode mining claim, known as the Hor-net, which said lease and bond was executed on the 2d day of May, 1900, from Isaac Knoyle and Samuel Kift as lessors, and running to Louis Mason and R. O. Merriman the grantors of L. O. Clark of the parties of the first part herein, it being the intention to convey by these presents an undivided  $\frac{1}{8}$  interest in all of the rights and title which now vest or may hereafter accrue in the said L. O. Clark and the parties of the first part, of in or to the Hornet quartz lode claim by virtue of the said bond heretofore referred to—all of which said lode mining claims are situated in Section 16, Township 3 North, Range 7 West, in Summit Valley Mining District, Silver Bow County, Montana; together with an undivided  $\frac{1}{8}$  interest in and to all the dips, spurs and angles, and also all the metals, ores, gold, silver and copper-bearing rock and earth therein, and all the rights, privileges and franchises usually had and enjoyed, and also all and

singular the tenements, hereditaments and appurtenances thereunto belonging or in any wise appertaining, and the rents, issues and profits thereof. To have and to hold all and singular the said premises, together with the appurtenances and privileges thereto incident, unto the said party of the second part, her heirs and assigns forever.

In Witness Whereof, the said parties of the first part have hereunto set their hands and seals this 11th day of March, 1901.

L. O. CLARK. [Seal]

CLINTON C. CLARK. [Seal]

(Duly acknowledged and filed for record on the 12th day of March, 1901.)

[301] (It was agreed between counsel for the respective parties that the acknowledgment to this instrument and those following, might be shown by the phrase, "duly acknowledged.")

By Mr. FITZGERALD.—We offer in evidence the deed made by Christopher P. Connolly and Mary E. Connolly, his wife, to Clinton C. Clark, the same identical interest and the same identical property that was conveyed by L. O. Clark to Mary E. Connolly.

The EXAMINER.—As I understand, you gentlemen are waiving the regular way of proving these instruments?

Judge BOURQUIN.—We admit that Mr. Shea is here, the Recorder of Silver Bow County, and has here the original records of Silver Bow County.

Mr. SHELTON.—The instrument is objected to

on the ground it is incompetent, irrelevant and immaterial.

Whereupon said instrument was read into the record as follows:

Deed: This Indenture, made the 27th day of November, 1908, by and between Christopher P. Connolly and Mary E. Connolly, his wife, of Missoula, Montana, parties of the first part, and Clinton C. Clark, of Butte, Montana, party of the second part, Witnesseth: That the parties of the first part for and in consideration of the sum of one dollar, lawful money of the United States, to them in hand paid by the said party of the second part, and the receipt whereof is hereby confessed and acknowledged, have granted, bargained, conveyed, remised, released and forever quitclaimed, and by these presents do grant, bargain sell, convey, remise, release and forever quitclaim unto the said party of the second part and to his heirs and assigns, all of the right, title and interest of the first parties of, in and to a one-eighth interest in and to the following-described real property and mining premises, to-wit: The Gulf quartz lode mining claim, Hope quartz lode mining claim; Olivia quartz lode mining claim; Rabbit quartz lode mining claim; and the Hornet quartz lode mining claim; all of the said quartz lode mining claims and premises being situated, lying and being in the Summit Valley Mining District, Silver Bow County, Montana. To have and to hold all and singular the said premises, together with the appurtenances and [302] privileges thereto incident, into the said

party of the second part, his heirs and assigns forever.

In Witness Whereof, the said parties of the first part have hereunto set their hands the day and year in this indenture first above written.

CHRISTOPHER P. CONNOLLY.

MARY E. CONNOLLY.

(Duly acknowledged.)

General NOLAN.—The next deed is a deed from Merriman and wife to James T. Fitzgerald, conveying an undivided  $\frac{3}{8}$  interest, which is as follows:

Mr. SHELTON.—This instrument is objected to on the ground that it is incompetent, irrelevant and immaterial.

(Whereupon said instrument was read into the record as follows:)

“This indenture, made the 29th day of January, 1920, between R. O. Merriman and Rachael Merri-man, his wife, parties of the first part, residing in Jefferson County, State of Montana, and James T. Fitzgerald, party of the second part, residing at Butte, Silver Bow County, State of Montana, Witnesseth: That said parties of the first part for and in consideration of the sum of two hundred and fifty-seven dollars and thirty cents, lawful money of the United States of America, and other valuable considerations to them in hand paid by the said party of the second part, the receipt whereof is hereby acknowledged, have granted, bargained, sold, remised, released and forever quitclaimed and by these presents do grant, bargain, sell, remise, release and

forever quitclaim unto the said party of the second part and to his heirs and assigns, all of the following described premises, real estate and mining claims as follows, to-wit: An undivided three-eighths interest of, in and to the Hope quartz lode mining claim; an undivided  $\frac{3}{8}$  interest of, in and to the Olivia quartz lode mining claim; an undivided  $\frac{3}{8}$  interest of, in and to the Rabbit quartz lode mining claim; an undivided  $\frac{3}{8}$  interest of, in and to the Gulf quartz lode mining claim; and also an undivided  $\frac{3}{8}$  interest of, in and to a certain agreement in writing and lease and bond for the purchase of the Hornet quartz lode mining claim, which said lease and bond was executed on the 2d day of May, 1900, by Isaac Knoyle and Samuel Kift as lessors, to Louis Mason as lessee, [303] and by the said Louis Mason thereafter and on the same date last mentioned assigned to R. O. Merriman, one of the grantors herein, each and all of which said quartz lode mining claims are located in Section 16, Township 3 North, Range 7 West, in Summit Valley Mining District, Silver Bow County, Montana, together with all the dips, spurs and angles, and also all the metals, ores, gold and silver-bearing rock and earth therein, and all the rights, privileges and franchises thereto incident, attendant and appurtenant or therewith usually had and enjoyed, and also all and singular the tenements, hereditaments and appurtenances thereto belonging or in any wise appertaining, and the rents, issues and profits thereof, and also all the estate, right, title, interest, property, possession claim and demand whatsoever, as

well in law *and* in equity, of the said parties of the first part of, in and to said premises, real estate, mining claims and every part and parcel thereof, with the appurtenances; to have and to hold all and singular the said premises unto the said party of the second part, his heirs and assigns. It is expressly covenanted and intended hereby to convey any and all rights, title and estate which may hereafter be acquired to said premises, real estate and mining claims, or any part thereof by virtue of any patent which may hereafter be issued by the United States Government therefor under proceedings heretofore instituted in that behalf.

In Witness Whereof the said parties of the first part have hereunto set their hands and seals the day and year first above written.

R. O. MERRIMAN.

RACHAEL MERRIMAN.

(Duly acknowledged.)

Mr. NOLAN.—Also we desire to offer in evidence recorded copy of deed from R. O. Merriman and Rachael Merriman to Elizabeth Brown, Executrix of the Estate of George W. Cooper, deceased, of an undivided  $\frac{3}{8}$  interest in the Hope, Olivia, Rabbit and Gulf quartz lode mining claims, and an undivided  $\frac{3}{8}$  interest in the lease and bond for the purchase of the Hornet claim, as the same appears at page 318 of Book 93, Records of Deeds, Silver Bow County, Montana.

[304] Mr. SHELTON.—That is objected to on the ground that it is incompetent, irrelevant and immaterial.

(Whereupon said instrument was read into the record, as follows:)

This Indenture, made the 29th day of January, 1910, between R. O. Merriman and Rachel Merriman, his wife, parties of the first part, residing in Jefferson County, Montana, and Elizabeth Brown, Executrix of the estate of George W. Cooper, deceased, party of the second part, residing at Walkerville, Silver Bow County, Montana, Witnesseth: That the said party of the first part for and in consideration of the sum of two hundred and fifty-seven dollars and thirty cents, lawful money of the United States of America, and further valuable consideration to them in hand paid by the said party of the second part, the receipt whereof is hereby acknowledged, have granted, bargained, sold, remised, released and forever quitclaimed, and by these presents do grant, bargain, sell, remise, release and forever quitclaim unto the said party of the second part, as such executrix, and to the heirs and assigns of the estate of the said George W. Cooper, deceased, all the following described premises, real estate and mining claims as follows: An undivided  $\frac{3}{8}$  interest in the Hope quartz lode mining claim; an undivided  $\frac{3}{8}$  interest in the Olivia quartz lode mining claim; an undivided  $\frac{3}{8}$  interest in the Gulf quartz lode mining claim, and also an undivided  $\frac{3}{8}$  interest in a certain agreement in writing, lease and bond, for the purchase of the Hornet quartz lode mining claim, which said lease and bond was executed on the 2d day of May, 1900, by Isaac Knoyle and Samuel Kift as lessors, to Louis

Mason as lessee, and by said Louis Mason thereafter and on the said date last mentioned assigned to R. O. Merriman, one of the grantors herein, each and all of which said quartz lode mining claims are located, situate, lying and being in Section 16, Township 3 North, Range 7 West, in Summit Valley Mining District, Silver Bow County, Montana. Together with all and singular the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining, and the rents, issues and profits thereof, and also the estate, right, title, interest property possession, claim and demand whatsoever, as well in law as in equity, of the said parties of the first part, in and to the said premises, [305] real estate, mining claims and every part and parcel thereof, with the appurtenances. To have and to hold all and the said premises, real estate and mining claims, together with the appurtenances and privileges thereto incident, unto the said party of the second part as such executrix and the heirs and assigns of the said George W. Cooper, deceased. It is expressly covenanted that it is intended hereby to convey any and all rights, title and interest which may hereafter be acquired to said premises, real estate and mining claims, or any part thereof, by virtue of any patent which may hereafter be issued by the United States Government therefor under proceedings heretofore instituted in that behalf.

In Witness Whereof the said parties of the first part have hereunto set their hands and seals the day

and year first above written.

R. O. MERRIMAN.

RACHAEL MERRIMAN.

(Duly acknowledged.)

Mr. NOLAN.—We also offer in evidence a warranty deed from Rachael A. Merriman and Robert O. Merriman, to A. Floyd Bushnell, conveying an undivided  $1/12$  interest in the mining claims referred to in the preceding deeds, recorded at page 17, Book 96, Warranty Deeds, Records of Silver Bow County, Montana.

Mr. SHELTON.—It is objected to on the ground that it is incompetent, irrelevant and immaterial.

(Whereupon said instrument was read into the record as follows:)

This indenture, made the 2d day of February, 1910, between Robert O. Merriman and Rachael A. Merriman, his wife, of Jefferson County, Montana, parties of the first part, and A. Floyd Bushnell, of Butte, Silver Bow County, Montana, the party of the second part, Witnesseth: That the said parties of the first part for and in consideration of the sum of one dollar, lawful money of the United States of America, to them in hand paid by the said party of the second part, the receipt whereof is hereby acknowledged, do by these presents grant, bargain, sell, convey and confirm unto the said party of the second part, and to his heirs and assigns forever, all the real property situated in Summit Valley Mining District, Silver Bow County, Montana, described as follows: An undivided  $1/12$  interest in [306] and to each of the

following named quartz lode mining claims: The Gulf quartz lode mining claim, located May 9, 1900, by R. O. Merriman, and recorded at page 96 of Book 2 of Lode Locations, Location Records of Silver Bow County, Montana; also the Hope quartz lode mining claim, located May 13, 1900, by R. O. Merriman, and recorded at page 97, of Book 2 of Lode Locations, records of Silver Bow County, Montana; also the Olivia quartz lode mining claim, located May 16, 1900, by R. O. Merriman and recorded at page 92 of Book 2, Lode Locations of Silver Bow County, Montana; also the Rabbit quartz lode mining claim, located May 8th, 1900, by R. O. Merriman, and recorded at page 94 of Book 2 of Lode Locations, Records of Silver Bow County, Montana; also an undivided 1/12 interest in and to a lease and bond on the Hornet lode claim, executed May 2d, 1900, by Isaac Knoyle and Samuel Kift, Louis Mason, and which was subsequently on the same day assigned to R. O. Merri-man by said Louis Mason, it being intended to convey herein all right, title and interest of the parties of the first part in and to the said Hornet lode claim by virtue of lease and bond, all of said described property being situated in Section 16, Tp. 3 N., R. 7 W., together with all and singular the tenements, hereditaments and appurtenances thereunto belonging or in anywise pertaining, and the reversion and reversions, remainder and remainders, rents, issues and profits thereof, and also all the estate, right, title, interest, property, possession, claim and demand whatsoever, as well in law as in equity, of the said

parties of the first part, of, in or to the said premises and every part and parcel thereof, with the appurtenances. To Have and to hold all and singular the above mentioned and described premises, together with the appurtenances, unto the said part of the second part, and to his heirs and assigns forever. And the said parties of the first part and their heirs do hereby covenant that they will forever warrant and defend their right, title and interest in and to the said premises, and the quiet and peaceable possession thereof unto the said party of the second part, his heirs and assigns against the acts and deeds of the said parties of the first part, and all and every person and persons whomsoever lawfully claiming or [307] to claim the same.

In Witness Whereof, the said parties of the first part have hereunto set their hands and seals the day and year above written.

ROBERT O. MERRIMAN.

RACHAEL A. MERRIMAN.

(Signed, sealed and delivered in the presence of  
E. E. Beale.)

(Duly acknowledged.)

**[Testimony of Ernest Watson, for Defendants  
(Recalled).]**

ERNEST WATSON, heretofore duly called and sworn as a witness on behalf of the defendants, being recalled, testified as follows:

Direct Examination.

(By Mr. NOLAN.)

The WITNESS.—Since I was on the stand before I have made a further examination of the leads in question, the northerly and southerly leads on the ground in controversy, I was out there yesterday. I visited a shaft designated as shaft 21; I think Tunnel 30 is the one I visited yesterday also. It is a little north of east from shaft 21, and has an easterly and westerly direction. I also on yesterday visited the Vesuvius workings. I on yesterday made an examination of tunnel 37; that would be the tunnel west or adjacent to the Mullins tunnel.

Shaft 21 on the northerly lead is a vertical shaft, approximately one hundred and ten feet deep, and timbered its entire length. There is a ladder that extends to the bottom of that shaft. I am mistaken, when I said this shaft was timbered to the bottom, it is timbered to within twenty-five feet from the bottom, and I slide down a rope for that distance to get to the bottom. In shaft 21 you do not find any high-grade material, but you do find an altered rock, and you can find fairly large sized crystals of quartz in this rock, and it is material which is found as a capping in veins, where the action of the elements has altered the rock. I would suggest something of a

(Testimony of Ernest Watson.)

vein or lead there. This material I call capping is shown in the entire bottom of the shaft; the bottom is about five feet below bedrock.

I also went into tunnel 30. I did not go into the portal of the tunnel, but I descended through a hole in the surface, which brought me into the cross-cut near the face of the tunnel. I have [308] samples to show what I found in the cross-cut that runs southward which is shown on Complainant's Exhibit 14, the first material encountered is a fine-grained rock, highly stained with iron, which is chiefly aplite. That is the rock I now present you with.

(Offered in evidence and marked Defendants' Exhibit 62.)

That is shown—Exhibit 62—at the mouth of the cross-cut and in the workings to the north—that same character of material. Proceeding southward, you obtain a more highly silicious material, the ground mass of which is very fine grained, but in which you will find phynocrysts of quartz; the sample containing this phynocrysts of quartz is the same I now hand you.

(Offered in evidence and marked Defendants' Exhibit 63.)

Aside from the *parties* of quartz that are discernible in the sample 63, the balance of the rock, is a highly silicious material, containing some feldspar, and hence it would probably be called aplite. I obtained another sample in that cross-cut. Right at the face of that cross-cut to the south you find a very highly silicious material, which is nearly all quartz.

(Testimony of Ernest Watson.)

These samples show the gradations from the true aplite on the north to the quartz on the face.

(Sample produced by witness offered in evidence, as found at the face of the cross-cut, and marked Defendants' Exhibit 64.)

The WITNESS.—In this cross-cut from tunnel 30, as it exists to the south, there is seemingly a change from aplite to quartz. The length of that cross-cut is approximately sixteen feet. With the exception of iron, there is a little evidence of mineralization in the line of precious metals in that piece of quartz obtained in this cross-cut. The change in conditions there in that cross-cut shows that there is a change to a more highly silicious material, of quartz, in the face of that cross-cut, which is good evidence of the existence of a vein in close proximity to the face of the cross-cut. Outside of that quartz, there is nothing to show in that cross-cut that there is a vein there. I do not know exactly how far it is below the bedrock where this quartz existed. The entire extent of that quartz body is not determinable from the workings there at the present time, but it was shown in the entire face of that cross-cut, along the bottom, and would be shown toward the south. There [309] is more or less gradation, as shown by the samples produced here, between the quartz and the other material, but when you get close to the face the change is not so marked.

Q. Now, in the light of the conditions there and in the light of the observations that you made on the other openings, about which you testified heretofore,

(Testimony of Ernest Watson.)

what would you say as to whether or not, in your judgment, this lead exposed in the eastern openings of that is continued through those openings referred to this morning, as the shaft and the cross-cut?

A. Standing at the western end of that property, near shaft No. 21, and lining up the openings between that point and the Vesuvius shaft, more or less of a direct line is shown.

Q. Keeping in mind the nature of the material shown on the ground, and having in mind that situation, what would you say as to whether or not the lead exposed in some of the openings and the evidence of which exists in some of the other openings is one and the same point?

A. Judging from that, I think it is.

The WITNESS.—I also went in the Vesuvius. Descending the Vesuvius shaft, and proceeding toward the south, twenty-six feet from the shaft, a vein is exposed which varies in thickness from a few inches to at least a foot. This vein is shown on the western side of the tunnel, and was followed for a distance of twenty-four feet. The dip of this vein at the western extremity is quite vertical, but at the eastern extremity, at the bottom, it has a slight dip toward the south. The strike of that vein is easterly and westerly. There is some modification or change in the dip in this distance of twenty-three or four feet. Of course that would be due to the fact that you have not a great deal of it exposed. Of course, any vein, if it has a general dip, say toward the south or toward the north, would change in places slightly,

(Testimony of Ernest Watson.)

so that it would be hard to determine its dip from any one point. As I last saw it in its course westerly, the dip is almost vertical. I say that is a mineralized vein. I did not take any samples from that vein. Toward the south there is another cross-cut which trends toward the south, in which little stringers of ore are found, which [310] have a strike easterly and westerly, about five feet south of the vein I have testified about that runs easterly and westerly.

Q. There is some testimony here that possibly that fissure there, or that crack—that lead—may be what is called a master joint in granite. What is your idea as to that?

A. My idea of a master joint is that it is nothing more than a well defined plane or rift plane in the granite, which is used materially in quarrying granite. Its thickness need not be over a very small fraction of an inch. When it becomes larger than that, it is a fracture in the granite, and not a master joint, and if this fracture becomes mineralized to the extent that is shown on the ground, I would call it a lead or vein. This fracture I notice in the Vesuvius workings does not disappear by depth, because it is a little wider at the bottom than at the top. Its extremities are not shown; it is at least a foot wide where it is last seen, on the west side.

I went in tunnel 37, or it would be the cross-cut from tunnel 37 to the Hornet tunnel, practically, because the mouth of tunnel 37 yesterday was so completely filled with snow, you could hardly get in there. As shown on Defendants' Exhibit 1, there is a cross-

(Testimony of Ernest Watson.)

cut running from tunnel 37 to tunnel 34. Of course that tunnel is at a little lower level and there is a raise to the mouth of the Hornet tunnel or tunnel No. 34. Tunnel 37 is approximately fifteen feet lower than tunnel 34. At the intersection of that cross-cut with tunnel 37, there is an opening to the surface, and it was from that point that I entered that cross-cut. I made an examination of the cross-cut, but did not go into the tunnel at all. In this cross-cut, at a distance of sixteen feet from the northern wall of the cross-cut which leads to the raise, which goes to tunnel 34, I found a lead at least one foot wide shown on both sides of the cross-cut near the bottom. I have samples of that material here, one from each lead.

(Samples offered in evidence and marked Defendants' Exhibit 65.)

This lead in that cross-cut is clearly defined from the surrounding rock; that is, you will not find material directly mineralized like that on either side. The strike is easterly and westerly, but [311] there is not enough exposed to give the dip. The samples I have produced here are mineralized; they contain chrysocolla.

Q. And having in mind the appearance of the lead as it exists there, what would you say as to whether or not it has any connection in its strike with the lead that is east of it and west of it, as you have heretofore testified about?

Judge BOURQUIN.—Objected to. He has not testified as yet to any lead west; assuming a fact not in evidence by this witness; incompetent.

(Testimony of Ernest Watson.)

A. It has an easterly and westerly strike as the other veins to which I have testified, and its character of mineralization is similar to that shown in the Hornet.

The WITNESS.—In the Vesuvius there is a cross-cut running north sixty-eight feet, at a point thirty-one feet from the shaft, northerly. You encounter a change in the character of the material, and this change extends over a distance of from seven to ten feet. This material, which is represented in seams shown on both sides of the cross-cut, would suggest a fissure, or fissures, which, although not having mineralized at that point, might be mineralized farther east or west. The conditions there indicate the existence of a fissure. The course of that fissure is easterly and westerly. I will state that that is not so highly mineralized as the mineralization to the south of the vein to the south. The Vesuvius shaft I am speaking of is noted on the map as the Vesuvius discovery. This last mineralized streak I am speaking of is north of the shaft, about *twenty*-one feet to the point where you first encounter it.

Cross-examination.

(By Mr. SHELTON.)

The WITNESS.—I had examined shaft 21 before yesterday; I testified about it before. Shaft 21 is not timbered to within twenty-five feet of the bottom, approximately. I have not said that there is a vein there, but I have said this time that there was more of a vein capping than the vein itself. I had more time this visit; the other visit I was just down in it

(Testimony of Ernest Watson.)

and out again. I will say that there is no high mineralization there—that is, no chrysocolla or cuprite, but the rock when brought to the surface will show a light [312] yellowish red and yellow stain, due to iron. You can find iron-stained rock almost anywhere, but not of that nature. It is a soft altered rock, which has changed by the action of the elements. I call it more the capping of the vein than the vein itself; that is something that might lead to a vein, yes, sir. I cannot say from the examination of that shaft alone that there are walls or defined boundaries to that material. That yellowish tinge that that material has might be due to a mixture of iron and copper stains, but as far as stating the exactness of what it is, I cannot. There is copper there in minute quantities. You might be able to find more copper in that material than you would in the specimens of aplite. In the country rock, say in the vicinity of the Mullins vein, you might find more copper than you do there. The most I can say concerning what I discovered in tunnel 21 is that it might possibly be the capping of a vein.

I think Defendants' Exhibit 62 is aplite, stained somewhat with iron. It occurs quite a good deal in that locality, and often in irregularly shaped bodies. In tunnel 35, you just run into that. You can find some of that material in the walls of tunnel 36. You will find stringers of that material with granite on either side. It is found within the granite also. You might find that stuff where there is no showing of a vein, but when you say absolutely no showing,

(Testimony of Ernest Watson.)

I will say no to that question. I can conceive of where you would have that material farther removed from a vein; it is distributed there through the granite very generally. I think I got this sample ten or twelve feet below the surface; I found it in tunnel 30. This sample 62 was obtained close to the intersection of the tunnel with the cross-cut going south. I got sample 63 a little bit farther south. It could be called quartz porphyry, with large sized crystals. It is a highly silicious material, containing distinct crystals of quartz. A little bit farther south, and about the same depth, I got sample exhibit 64, which is quartz. Sample 64 was obtained right at the face of that cross-cut going toward the south. It would be close to a point represented by a small red line on Complainant's Exhibit 14. I picked that piece, sample 64, off of a [313] large mass of this material. There is a little bench in the face of that cross-cut, and it is from that little bench I obtained it. I would say it is from a foot to a foot and a half wide there. I could not tell the dip of the vein. The strike is east and west.

I also went into the Vesuvius and twenty-six feet south of that I found a vein. And farther south of that I said I found a little seam of mineralized material. I said standing over here, and keeping in mind where I saw the material exposed in the various openings, it has a generally straight line course. The fact that the openings were on a line would not indicate to me that they are upon one vein, but keeping in mind what you see in the ground; that is a good

(Testimony of Ernest Watson.)

practical test. The openings I refer to include the Vesuvius, tunnel 31, shaft 21, tunnel 30.

There is a vein in tunnel 31, in the cross-cut north, also in the tunnel as represented on Complainant's Exhibit 14. I think the strike indicated on the map is a little bit too much to the north. I did not make any measurement or use a compass myself. The strike is probably correctly represented on that map, but it could still be in reality a little too much to the north, because in platting this, the survey points were taken not exactly in the center of the tunnel and then the side line of the tunnel could be just over a little so that point was in the center. The shifting would be done easily enough without in reality making a known mistake. I say there may be slight inaccuracies in the platting of the map.

Q. But that would not exceed a foot, or a couple of feet?

A. Well, a foot or a couple of feet in giving the strike for a couple of feet, and then containing that for the distance of the claim, would make a good deal of difference.

The WITNESS.—That map is drawn to a scale of a hundred feet to the inch, and two feet on there would make but little difference. I would sooner see a map showing the cross-sections of those at the points where the vein is exposed, and then platted showing the distances from the walls.

As shown there, the strike of that vein does not bring it near shaft 21 or tunnel 30. Again, further work in this cross-cut to the [314] north, in tun-

(Testimony of Ernest Watson.)

nel 31, has shown that there is more than is shown there,—that is, in my judgment, and hence the correct strike is not shown there. The face of the cross-cut is not necessarily entirely through the vein. In the face of that cross-cut now, there is a granite rock, but that granite rock is slightly stained green and, as farther back we see stained rock in between rich stringers of ore, we have no right to assume that the wall we have now, or the face of the tunnel, is the true wall of the vein; and further we do not know the width here; that is, at a point thirty-three feet from the intersection of the north cross-cut with the tunnel. Of course, we cannot assume there is anything there until it is shown. The depth of shaft 21 is one hundred and ten feet.

Q. If there were a vein disclosed there, you would not expect it to be the same as the vein which occurs up here in the shaft ten feet below the surface, would you? The dip of the vein would necessarily bring its apex some distance either to the north or south according as its dip was either north or south?

A. If it had a slight dip, or was nearly vertical, that would not make much difference.

The WITNESS.—Yes, the vein in tunnel 31 has a dip toward the north, a few degrees from the vertical.

There is a well-defined stringer in the Vesuvius shaft, about twenty-six feet from the shaft, that is a well-defined vein. There is also one stringer farther south which may be a part of that same vein. The vein twenty-six feet south from the shaft varies in

(Testimony of Ernest Watson.)

width from a few inches to a little over a foot. It is in granite formation. I say that could not be a joint plane of the granite. If it were a joint plane and were mineralized and had any appreciable width I would call it a vein. If it was mineralized and just a joint plane, it might be designated by Winchell's term, "veinlet." Joint places do exist and they are used extensively in the quarrying of granite. Joint planes are probably the contraction cracks formed in the magma when it consolidated. Cracks in the granite will follow the planes of weakness, which will probably be along the planes. Such a crack can have almost any width, providing the material is [315] ground up in between it, and if it then becomes mineralized, if it has any appreciable width to the extent that ore is found in it, why then it is a vein, but would not be called a crack. It may and may not have great length and depth. If I find mineralization for the width of one foot, whether it be in a crack or fissure of any kind, if that carries sufficient mineralization, why then I would follow it regardless of its genesis. I would expect it would go down and the mineral follow it to this extent. Of course, knowing how the ore changes, I would probably expect the character of the mineralization to change some. But to simply grant that a crack that is mineralized, and to state specifically that it has sufficient mineralization, is a pretty random guess. The mineralization in a joint plane is not necessarily different from the mineralization in a vein; it could have been deposited the same way. If I had just

(Testimony of Ernest Watson.)

what I was sure was a joint plane, which was very close together, there would be no appreciable quantity of mineralization there; I do not conceive of a joint plane being from one to two feet wide and mineralized. If I was sure I had just one joint plane, and that it was not of any appreciable width, I would not attempt to develop a mine out of it.

Coming back to this question of lining up the shafts, it could be said roughly that the Olivia shaft, shafts 1 and 2, and openings on tunnel 31 and the Gulf Discovery are all in a line; that is, disregarding anything that has been seen on the ground. We know that in these various openings, the veins as disclosed have an easterly and westerly strike, and to make the Gulf Discovery in line with shaft 1 and 2 and the Olivia and tunnel 31, we have to absolutely disregard that point. I did not say I was disregarding the strike in tunnel 31 in order to put the openings on a line and say they are all on one vein, because as I saw it on the ground, I think that strike is more northwest and southeast than that shown here. You have what I think is possibly one wall; I thought that south wall had a strike more northwest and southeast than is shown here.

I include in my enumeration of what this vein runs through the [316] cross-cut from tunnel 30, and shafts 1 and 2 come practically in the same direction. There are veins in shafts 1 and 2. No. 2 does not show any distinct vein. This quartz stringer in No. 1 could be used. I said it would suggest the presence of a vein.

(Testimony of Ernest Watson.)

Q. What did you mean when you said that there were stringers in the south end of this cross-cut and Vesuvius shaft?

A. There is a cross-cut that runs a little more to the south than is shown on that map, and in that, roughly paralleling the east and west vein, shown at the point twenty-six feet from the shaft, are small stringers carrying high mineralization. Stringers are small seams varying in thickness, and in this carrying mineral.

The WITNESS.—Stringers are relatively small seams, carrying mineral. In large veins the stringers might be large compared to a knife blade, or compared to one foot even, but they are small with regard to the entire vein. That is the reason I use the term relatively.

Q. Well, these stringers I understood you to say possibly connected with the vein to the north?

A. No. They might continue on roughly parallel to it, but they might change. They are thick enough to unite with them at depth.

The WITNESS.—Taken in a small portion, a stringer is the same as a vein; it could be called a veinlet perhaps. It would have to have boundaries and mineralization. In this instance the boundaries are slightly altered granite.

When I was on the stand the other day, I referred to a stringer which I said could be seen in the Hornet shaft at about seventeen feet below the surface. I used the term in practically the same way then.

Q. Now, in tunnel 37, you say you found a vein

(Testimony of Ernest Watson.)

that is about sixteen feet south from the north end of that cross-cut?

A. Well, there might be some discrepancy as to where that measurement was taken, but it was sixteen feet from the north wall of the cross-cut, as it turns to unite with the raise that connects with tunnel 34.

[317] The WITNESS.—That point would be, on complainant's map 15, just a little north of the second word "aplite." About halfway between the two words "aplite." That vein is well defined as shown; it is probably one foot wide. The walls are aplite.

Q. Did you examine the cross-cut clear down to the tunnel?

A. Well, from the point where the vein is shown, why the tunnel is fairly well filled with wash,—that is, the wash comes down nearly to the bottom, and the wash is caved from the back and sides of the cross-cut.

The WITNESS.—You are in bedrock from what I call the vein north, the Mullins tunnel, at the bottom; the bedrock is exposed. That is the only distinct stringer or vein I saw there, but you will find a green mineralization in various places, especially just on the corner where it makes a turn to the right, where it connects with the Hornet tunnel,—there is a little green stain there. I do not call that a vein there, what is exposed, but it could be vein material. As it is shown there at that point, it is not a distinct vein by itself; just the one vein is exposed there; from that map, it is a little south of west from the

(Testimony of Ernest Watson.)

point marked "Hornet Discovery."

Q. And the Hornet Discovery, and at the cross-cut north of it, and the Mullins tunnel, there is a vein which is over thirty feet wide, isn't there?

A. Yes, sir; having an easterly and westerly strike.

The WITNESS.—That vein does not necessarily dwindle down to a width of one foot in that distance; but we have just one foot exposed in that cross-cut, and that foot is shown in the bottom, just in bedrock; I am speaking of cross-cut 37; and again if you go up in the Hornet tunnel, or tunnel 34, and if you will look in the back, you will probably see they have only one foot of rich material.

A very well-defined vein would have to have two walls, I should judge. When I say one foot wide of that material, it might be slightly greater than that, and grade a little more into the walls as it proceeds, but just at that point, with the exception of a slight green mineralization, that is the only well-defined seam which I had. That vein is not well-defined to the extent that you could put a knife point as to where the mineralization ceases; it is [318] not well defined to that extent. I think there is a vein there, and then within the vein a rich stringer; the stringer is one foot wide; I do not know the width of the vein. I did not see the walls. I could not see any other mineralization to the south, owing to the fact of the presence of the wash, but there is at various places toward the north green stain, which might be just stain and which might also be replacement of the wall rock,—of the country rock. If that stain

(Testimony of Ernest Watson.)

is sufficient to make the percentage of stain considerable, then it is vein material. I did not call that vein, but it might be vein material. I said at that point, I could not take that separate chunk and call it a vein, but that don't necessarily mean I did not say it was in vein material. I could say I think it is vein material on account of the mineralization shown there.

Q. As a matter of fact, you do not know whether there is a vein there or not, do you, from anything that you saw there it may or may not be?

A. There is a very good indication, owing to the highly mineralized one foot that was there.

The WITNESS.—To me that is a good indication of a vein.

I testified about a stringer in the Hornet shaft having a northerly dip and having a width of about a foot or a foot and a half. It would lay under the floor of the cross-cut on the north and east, come slightly under the bottom coming southward. It would vary from nothing up to say a foot and a half. Some of that material was richer than three and a half per cent. It was richer than some of the material beneath it; and I will state here now the reason that it is not seen toward the west is that the wash comes down there and cuts it off, and it is slightly shown on the east side. This stringer is of greenish color; it can easily be seen. I could not tell why they did not take it out when they were running the cross-cut from the Hornet to the Gulf. They cut into it when they sunk down there I think. It has been

(Testimony of Ernest Watson.)

dug into, as I understand, some of the material has been shipped from the Gulf, but why it was not all removed, is something I do not know. If I owned it, I would remove it. I think part of it was taken out. I do not know how [319] much. That could probably be obtained from the testimony of those who took it out. I do not know whether it got wider over towards the south; you can't tell anything about the width at the shaft. I do not know how thick it was there.

Q. Why do you think some of it was taken out?

A. Just what I have seen there and heard as to when the Gulf shaft was sunk, why that material was taken from there and the bottom of the Gulf comes to the floor there,—they must have taken it out.

The WITNESS.—If the Gulf came only to the bottom of that cross-cut, it would rest on it perhaps. Just at the little opening which goes from the Hornet shaft to the cross-cut, or at the bottom of that bench, upon which the bottom of the Gulf shaft rests would indicate some of it was taken out. I think they took out a portion of the eastern extremity of it, and this stringer is shown on the east side,—a little of the Hornet shaft, and hence would extend into the southern portion of the Gulf shaft. They may have cut through it. It may have thinned down at that point, but that is something I am just guessing at. I could not give any exact reason why I did not take the direction or strike of the south wall of the vein as shown in tunnel 31, with a compass. I saw it taken with a compass.

(Testimony of Ernest Watson.)

Redirect Examination.

(By Mr. NOLAN.)

Q. By whom was the compass observation made at the time you were advised that the strike was northwest and southeast instead of northeast and southwest as it is shown on this Complainant's map, Exhibit 17.

A. I think it was taken by Mr. Barker.

Q. If, as a matter of fact, it is an established fact in the case that the strike instead of being shown as it is on this map, northeast and southwest, it should be shown to be northwest and southeast, what do you say then as to whether or not the indications in that tunnel would influence you in any way in the judgment that you have reached that that is the same vein as disclosed in all of those openings, partially or wholly?

[320] Mr. SHELTON.—We object to the question because it assumes something as a fact which has not been shown to be a fact. It assumes that the strike has been shown as different from what it is shown on the map, and as far as I know there is not any evidence that amounts to anything, that there is such a strike.

A. If that strike were shown to be northwest and southeast, it would then coincide with what I have thought all along, and would coincide with my opinion given as to the general line of those openings. It would strengthen my opinion to some extent that the lead exposed in all those openings is the same lead.

The WITNESS.—There are not sufficient develop-

(Testimony of Ernest Watson.)

ments, in my judgment, in the cross-cut from tunnel 37 to disclose the width of the lead there. I could not say if the discolored material that I spoke of, independent of the vein I spoke of, was vein material. If the mineralization was sufficient, it certainly would be vein material. Further work from cross-cut 37, or from the bottom of the Hornet shaft would disclose the true width of the vein.

Q. When you speak about the walls of the vein in the cross-cut from 37 tunnel, did you desire to be understood that those were the walls of that fissure?

A. Those were the walls of that one rich stringer.

The WITNESS.—From the mineralization shown elsewhere, I should judge that that is a rich stringer by itself.

Recross-examination.

(By Mr. SHELTON.)

The WITNESS.—When I speak of this being a rich stringer by itself, I am in a way basing my conclusion on what I saw in the cross-cut cutting tunnel 37, because I saw evidences of mineralization besides that one rich stringer. And, again, in the other workings shown in the same tunnel 34, I saw conditions similar. I think the rock on either side of this vein is aplite. I could not say whether the mineralization extended to the south or not, because of the wash there, but at the north you will find mineralization, and in small cases you will find rich mineralization, so that the mineralization is not exactly all slight. You will find little spots of rich [321] mineralization, say in corners of a large rock the size

(Testimony of Ernest Watson.)

of your fist, which will be fairly well stained up. That stain may be either the color of the molecules or the crystals which compose the rock, or it may be the replacement of some of the constituents of the rock. If the staining is sufficient to increase the mineralization to any extent, then it is as much vein material as if it was formed by vein replacement itself. I cannot say whether the vein stops and the country rock begins within definite limits. The granite around there contains copper, copper pyrites in minute quantities. That copper in some cases will stain portions of the rock in the process of weathering the granite, but you will find large masses of granite altered to such an extent that it becomes nothing but a fine powder, and the green stain, due to the weathering of that copper, is very slight.

Q. Well, I ask you to assume that the mineralization is only in small places, or small pieces of the rock, and that the rock is widely scattered over a large area, that the portions of the rock in those places is more or less stained, other places greater mineralization, but the mineralization where it has occurred does not extend over a large area, but over a small area, the rock is not of sufficient value as it is mineralized to take it out for treating. Would you call that a vein?

A. Conditions as you have given them suggest the term vein for the entire mass, but the richer material within that mass would be termed ore chutes.

Q. Well, if there is not chutes of ore, as I have asked you to assume, if you assume that the miner-

(Testimony of Ernest Watson.)

alization is great, it covered a small area, a few feet in extent, small separated pieces of stained or impregnated rock, and the mineralization is entirely superficial near the surface, and not of sufficient value to justify taking out, of the mineralized rock for treatment, would you still call that a vein?

A. It might still be called a vein. If there was only just a mere stain,—if that was all there was to it, and that extended over large areas, then it would be called more of an ore body. If it is not a mere stain, but is impregnated so as to form copper silicate, I [322] think it would be termed a vein. It would have definite boundaries, because there would be boundaries between the points where the impregnation ceased and the country rock began. When I say boundaries, I do not mean that it must have well-defined walls. The definite boundaries can be very irregular; that is, according to the impregnation of the rock.

Q. I have asked you to assume that these pieces of rock are isolated, and that they are scattered—that is, the pieces of rock that are impregnated with copper, they are merely scattered or widely distributed over a large area and not in bodies at any one place, of any considerable size. There is no definite boundary?

A. There are definite boundaries to each particular mass to which you refer.

Q. Do you call that a tabular mass, a metalliferous mass?

(Testimony of Ernest Watson.)

A. It is not exactly tabular. It is more of a kidney.

Q. Well, then, such a deposit would be classed as a vein, would it?

A. That would depend more or less on how distant these bodies were. If we have a mass containing kidneys here and there, then on each side of that we have a mass which does not show these—that whole mass can be considered a vein, but probably not a paying vein.

The WITNESS.—You have asked me to assume that these pieces of rock are widely scattered, isolated and widely distributed, and I have stated that it would not be sufficient to pay. You would simply call that a deposit of mineral.

Such mineralization as I saw in the tunnel connection 37, could only be determined where it was part of a vein by an assay. If you could get a fair assay across that cross-cut, that would prove more conclusively what it is. I did not make such an assay, so I cannot say at the present time whether it is a vein or not.

Q. Now, I will ask you to assume that this map, Defendants' Exhibit 1 is correct so far as tunnel 31 is represented on it, and I will ask you to indicate, if you can, the place in the north cross-cut where you first encountered the vein?

A. The place where I first encountered the vein in that north cross-cut in tunnel 31, would be approximately a quarter of an inch [323] from the intersection of the openings and the cross-cut; that would

(Testimony of Ernest Watson.)

be a quarter of an inch on the map, and nearer to the brown streak.

The WITNESS.—I encountered the ore in the tunnel east of the cross-cut, running north, thirty-three feet from the intersection of the north cross-cut and the tunnel; on this map that would be about a third of an inch. It would be about midway in that brown streak, as shown on the map. The brown streak is about an eighth of an inch wide. I think it was a wall in both cases I saw there; it would be the footwall. I had the strike of the footwall and the vein there for that distance. Of course, in putting a straight edge on a map of this sort, with that scale, it is pretty hard to judge exactly where to put it. (Witness places straight edge on map.) That line will not, if produced, strike very close to shaft 21; it would run some distance south. We are taking the strike of a large vein within a distance of thirty-three feet, approximately, and a slight error here would make a vast error in the distance of a thousand feet. It would be determined exactly on the ground; if there is any error it is in the platting of the map. I measured the distance on the ground, but this is a large scale, one inch to a hundred feet. And again, we did not have one wall here, and one wall would not determine the exact strike of the vein. Still it indicates in a rough way, the strike of the vein, and you can allow a margin or variation and still you have your strike in a northwesterly and southeasterly course—slightly north of each. It

(Testimony of Ernest Watson.)

would have to vary some to twist it around into a northwesterly course.

(Signed by the witness and sworn to before the Master, Jan. 9, 1912.)

**[Testimony of H. A. Bowman, for Defendants.]**

H. A. BOWMAN, duly called and sworn as a witness on behalf of the defendants, testified as follows:

Direct Examination.

(By Mr. NOLAN.)

The WITNESS.—My name is H. A. Bowman; I live in Butte, Montana; have lived here off and on since 1885. I came here first in 1885 and have been away and lived in other parts of the State a while and other parts of the country at different times. I have lived here continually [324] now since 1903 or '4. Before coming here in 1885, I lived in Utah most of the time, and a short time down in Oregon. During the time I was absent from the State after coming here in 1885, I was in Nevada for a short time and Utah for several months, up in British Columbia and down in South America. In those trips I was either in mining or in the reduction of ores. The biggest part of my time in the past has been in mining and milling. I have been engaged in that business since 1882 and '3. I did mining in Utah. The first few years after coming to Montana I worked in the quartz mills. Along about 1894 or 1895 I did my first quartz mining in Montana. At that time I was working in the mines as a miner, and since then I have been shift boss in the mines, and have had

(Testimony of H. A. Bowman.)

charge of them. I was shift boss at the Speculator for the North Butte Company for about a year and a half. I am not a geologist, but I have noticed the rocks and the leads, and the discoloration of the ground. I have, in my mining experience, located claims myself. I located some in Utah, some in Jefferson County and some in Granite County of this State. Granite county was then Deer Lodge county. When I was in Nevada I was mining for the Western Exploration Company just as a miner. In milling I have worked in the dry quartz silver mills. I never did any placer mining.

I have made an examination of the ground in controversy here. I went out there first on December 15th for the purpose of making an examination. I was out there on the 15th, 16th and 17th, and have made several trips out there since, four or five. From my examination I came to the conclusion that there is a lead or leads traversing that ground, two leads.

I made an examination of what is referred to on the map as shaft 21. It is a shaft about four by four, and in the neighborhood of a hundred and ten feet in depth. I did not measure it. The shaft goes through the wash to bedrock. The wash is about a hundred and five feet deep, taking the shaft as a hundred and ten feet in depth. It was timbered so I could not see very much of it, but it looked as though it just got down in bedrock three or four feet. There was good looking material in that shaft to suggest the existence of a lead; the whole bottom of the shaft

(Testimony of H. A. Bowman.)

is covered with it. [325] I call it ledge matter. It was highly stained with iron, but as to any other minerals, I could not tell from looking at it. I could not tell from the lead matter exposed there what the strike of the lead was; and I could not tell its dip.

I next went into tunnel 30. I did not go into the mouth of it; there was a cave further east up to the surface. I went down through that cave into the tunnel. We then went east in the tunnel to the face of it, and came back and looked in the cross-cut going south, also the one going north. There is good indication of a lead in the face of that south cross-cut. The material is of different character than the rock on the north side, and appears to be mineralized, stained with iron. That is to say, in those two cross-cuts I passed from one kind of material to another. Referring to the material I found in the southerly cross-cut, it suggested to me a lead; the material was stained considerably with iron. I could not tell whether it contained copper. I found some quartz there that I would call quartz porphyry. As this quartz porphyry was there it would suggest to me the outcrop of a lead. There was a good deal of difference between the depth of the way there and the depth of the wash in shaft 21. I should judge the distance from shaft 21 to this tunnel 30 would be somewhere in the neighborhood of a hundred and fifty feet.

I did not go in shafts 1 or 2.

I was in tunnel 31, the Rabbit Discovery, shaft No. 9, and the Vesuvius Discovery.

(Testimony of H. A. Bowman.)

I have been in tunnel 31 a number of times. The first cross-cut to the north has been extended since I was first in there. I found a vein in the face of that north cross-cut when I first went out there on the 15th day of December. Where it was opened there in the cross-cut, it was dipping to the north. I found what might be the footwall. I could not say; it was not as highly mineralized as the rock further from there north. Beyond that footwall to the south the rock was stained up some, but not as much as it was from the point where I first encountered this ore going north. I think from the work done there and the exposure made I am able to state [326] definitely that the wall is exposed. The footwall would be the southerly boundary of the lead.

The first time I visited that cross-cut, the face of the cross-cut was all in ore. Where it was first encountered, there was at least a foot of ore, and farther on into the face it was lower grade. Since I was first out there, the cross-cut has been extended. I was out there on two different days and found a man working in there extending the cross-cut north. The cross-cut is now well mineralized for a distance of nine feet from where they first encountered this ore, north, and from there to the face it is not so highly mineralized. The width of the mineralized material, extended to where it diminishes in value, would be a distance of nine feet. The cross-cut goes in there one or two feet farther. There is a lessening of mineralization as you go into the face of the cross-cut. The face of the cross-cut is in granite. I would

(Testimony of H. A. Bowman.)

not say there is a hanging-wall there without further development. As I looked at the lead in this cross-cut, it appeared to be running in an easterly and westerly direction; it looked to me to be nearly due east and west. You can determine the strike of a lead for the distance it is exposed, but you cannot determine what its regular strike would be for any distance. I never saw a lead but what would vary on its strike a few degrees one way or the other. It would be going a few degrees south of west for a distance and then make a change and go a few degrees north of west and then turn back, and zig-zag back and forth. Some of this ore I saw there was commercial ore. I went in the cross-cut which leaves the tunnel and runs southeast. I did not see any indications of the same lead that exists in the north cross-cut being in there. The material in there was barren country rock. I was all through the tunnel clear to the face. I encountered this lead, which I saw in the north cross-cut, again on the north side of the tunnel thirty-three feet east of the north cross-cut—thirty-three feet in the tunnel from the north cross-cut. There was about a foot of it exposed there, or probably a little more, for a distance of about twenty feet. The tunnel was cutting the vein more as it got east than it was when it first cut it, but it did not cut clear through the vein. The vein I [327] am referring to appeared to have about the same dip and be in line with the vein in the cross-cut at this point; the dip was toward the north. For a short distance as it was exposed the strike may have been nearly

(Testimony of H. A. Bowman.)

east and west. I saw a seam running along the back of the tunnel, that I thought was possibly the foot-wall. When I speak about the back of the tunnel, it was along near the center of the roof. I saw the streak on the north side of the tunnel. The vein after leaving the point referred to became lost to sight for a ways. I encountered it again about fifteen or twenty feet west of the face of the tunnel. Part of the tunnel is in the vein. There is some coming in there that cuts diagonally from the north side across the tunnel and goes along it to the face. It was visible at the face.

I went into the Rabbit Discovery; that is a shaft about eleven feet deep; I think it goes into bedrock. There is one opening leading from the shaft west. I saw a stringer of ore in the Rabbit Discovery from two to four inches wide. I saw that in the little drift west from the shaft. I think this stringer of ore was right from the bedrock down in the ground about three feet; it was running in an easterly and westerly direction; from the small part exposed there, it had a slight dip to the north. It seemed a very high copper stain. I could not say that there were any permanent fissure walls disclosed for this stringer. There was hardly development work enough to show what would be termed a wall.

I went down in shaft No. 9 a distance of about twenty-five feet, and into a little cross-cut going north; I think it extends in there a distance of about ten or eleven feet. There is a good showing of lead there. The material was mineralized. There were

(Testimony of H. A. Bowman.)

two small streaks there which were more mineralized than the other parts, appeared to be a little bit richer than the rest of it; and the ground north of there appeared to be considerably quartz stained—iron stain. I did not see it extend into the shaft. I went from the shaft in a cross-cut north to that vein. In its strike easterly it had not cut into the shaft—that is, if it kept the course it showed on both sides of the cross-cut. The strike was easterly and westerly. The dip was nearly vertical—slightly to the north. [328] I could not see anything, with the amount of work done, which I could determine was a permanent wall or not. I could not therefore tell the width of the fissure at that point. Between those two streaks I spoke of there was three or four feet of mineralized matter. It was more highly mineralized than it was south or north of that.

Q. Now, what would you say as to whether or not the mineral indications were such there at that point that you as a reasonable man would be justified in locating the ground as a mining man and prosecuting work upon it?

Mr. SHELTON.—Objected to as incompetent and irrelevant and immaterial.

A. Well, I would like to find as good on Government land that I could locate myself.

The WITNESS.—The mineralized matter in the Rabbit Discovery was very similar to that encountered in the cross-cut from shaft No. 9.

I then went into the Vesuvius. I went down that shaft and along a cross-cut south, about twenty-six

(Testimony of H. A. Bowman.)

feet south of the shaft, and I found a lead there running in an easterly and westerly direction. It was a streak of about six or eight inches of a fair grade of ore. It would be reasonable to suppose that the material I encountered in all these openings I have testified about, extending from the Vesuvius discovery to tunnel No. 21, would be one and the same vein. Of course, you could not tell without cutting all those workings. My best judgment is that they are all one and the same vein.

Proceeding from the northerly to the southerly lead, I will say that I went into shaft No. 19. That is a timbered shaft, and down about ninety feet, I should judge. There is good evidence of mineral in that shaft, vein filling. The wash in that shaft, I should judge, is about ninety feet, and it is all in wash except four or five feet. This lead matter is practically at the bottom of the shaft, and it is exposed in both sides and ends. It is highly stained with iron and soft; being so near the surface, it would not carry more than a trace of values. The lead is wider than the shaft. It [329] shows on both sides and both ends.

I went into tunnel 35. Most of that tunnel is in wash, until you get within a few feet of the face. There is a short cross-cut a few feet back from the face, going north, that is run right at bedrock. After striking bedrock, it showed a granite formation, stained with iron, but there was hardly work enough done so that I could pass an opinion whether there was vein there or not. It was stained up more than

(Testimony of H. A. Bowman.)

usual; the country rock is granite.

Going back for a moment to the cross-cut in tunnel 31, I made an examination of that cross-cut for the purpose of determining whether the material in that cross-cut rapidly disappears as you go to the bottom from the top of the cross-cut. I found as rich material in the bottom as I did in the back. I have a specimen here that I took off of the west side of that cross-cut, near the bottom. (Witness produces sample.) I got that in the north cross-cut, on the side, twelve inches from the bottom of the cross-cut. It was all in one piece, and I broke it into two pieces to look at it, to see what it looked like inside. It is a high grade of copper. That red stuff is oxide of copper.

(Specimen offered in evidence and marked Defendants' Exhibit 66.) I took that from the cross-cut in tunnel 31, on the west side of the cross-cut near the bottom; from the northern part of the enriched streak. That piece was obtained from the portion of the cross-cut that was run after I first saw it.

I made an examination of tunnel 36. There are numerous stringers of quartz showing in there, after you get in where it is in below bedrock, showing iron stain; they appeared to have an easterly and westerly strike. The material there looked very favorable for the capping of a vein. I could not say whether the material contained any mineral; I did not have it assayed, but it looked to the eye as though it contained values, but it would not carry values to any extent,

(Testimony of H. A. Bowman.)

as a person would not expect to find values usually that close to the surface.

Tunnel 37 disclosed mineralized rock, with good indications of a lead. The portion I have reference to was about sixteen feet south [330] of the north end of the cross-cut, but it all appears, I would judge, to be mineralized. That cross-cut was run partly in wash and partly in bedrock, and you can see but very little of the bedrock as you go along. I picked it in several places, and found it stained with a copper stain. There is one streak of mineral in there that is richer than the other, of about a foot in width, but the width of the mineralized matter I could not tell, as I did not find the wall. Outside of this rich streak, I picked in one or two places and could find little specks of copper stain in the rocks. In my judgment, from the examination I made there, this mineralized matter is a portion of a lead.

I made an examination of the Mullins tunnel and the cross-cut from the tunnel to the Hornet Discovery. I have been in there nearly every day, and have been out there eight or nine times. There is a lead disclosed there. I find it in all that work in the Mullins tunnel, that cross-cut south, and in the Hornet shaft; that is all one lead. The Hornet Discovery, from the point I took for the surface, measured thirty-three feet deep. About sixteen feet of the shaft is in bedrock. The bedrock commences about midway between the bottom of the tunnel and the back of the cross-cut from the Mullins tunnel to the Hornet Discovery; about two feet, I should

(Testimony of H. A. Bowman.)

judge, below the back of the tunnel. I could see three sides of the Hornet Discovery shaft from the wash down, and they all showed mineralization. The other side appeared to be a fill; I could not determine what it would look like originally. The mineralization was very good; that is, it would look as though it would make a grade of copper ore that would run, the whole thing, from two to three per cent copper.

Q. Now, what would you say as to whether or not that disclosure there in that shaft, and in the place you have indicated, a reasonable mining man would be justified in locating that ground as a mining claim and prosecuting work upon it?

Mr. SHELTON.—Objected to as immaterial and incompetent.

A. It is a good showing for that distance from the surface; and I would say yes; the ground would justify location as a mining claim.

[331] The WITNESS.—That shaft is all mineralized from the bedrock down to the bottom of the shaft. The matter that appeared in the shaft there is, in my opinion, a portion of a lead. The lead extends from that shaft going southerly. You find the same character of ore or material north of the shaft that you find in the shaft, for a distance of about thirty feet; I would say the lead extends that distance northerly from the shaft. It is disclosed in the cross-cut from the Mullins tunnel to the discovery shaft, and also in the tunnel at the bottom of the shaft going north for the length of the tunnel. I went through the Mullins' tunnel right to the face.

(Testimony of H. A. Bowman.)

I noticed the Mullins shaft. I noticed the boundaries of that shaft, the south and northerly side. The hanging-wall there shows the same character of rock, mineralization, as the back of that tunnel, and the cross-cut going south from that tunnel to the Hornet shaft—they are all in the same character of rock. I have a piece of rock here from the back of the Mullins tunnel, one from the so-called hanging-wall and one piece I took out of that cross-cut going south to the Hornet shaft, ten feet south of that tunnel, and they are all of about the same character of ore. (Witness produces samples.) I obtained this piece out of the back of the Mullins drift-tunnel, right up overhead. (Offered in evidence and marked Defendants' Exhibit No. 67.) I took that sample ten feet west of the east face of the Mullins tunnel; on the back of the tunnel, right up overhead. The material right in the face is a very dark red iron stain, but it is very, very light—rather stained red. The sample was taken out as the lead was exposed in the tunnel, back where I got it; it is a low-grade copper ore. I obtained my next sample right opposite it, in the so-called hanging-wall, as it is disclosed along by the Mullins shaft and in the tunnel going along there. This was taken right south of where the other sample was taken. The one was taken from the back, ten feet west of the face, and this was taken off of the so-called hanging-wall, right opposite the other sample. (Sample offered in evidence and marked Defendants' Exhibit 68.)

I got this third sample ten feet south of the Mul-

(Testimony of H. A. Bowman.)

lins tunnel, in [332] this cross-cut going south from the east side, about midway up the side of the tunnel, about halfway between the top and bottom of the tunnel.

(Sample offered in evidence and marked Defendants' Exhibit 69.)

Q. Now, then, why was it that you obtained those three samples from these different places?

A. I had heard the testimony as to their Mullins vein, and the hanging-wall, and there being no vein in this cross-cut south from the Mullins tunnel, and I took the three pieces of rock from the three different places to see if there was any difference in the character of the rock.

The WITNESS.—They are all about the same grade of copper. The strike of the lead that is disclosed in the Mullins tunnel, and the cross-cut from it is a little north of east and south of west. Its dip was to the south.

Q. Now, then, having in mind the conditions existing in those different openings extending from the Hornet Discovery to shaft No. 19, what do you say as to whether or not the lead in the Hornet Discovery and the adjacent ground is the same or a different lead from that disclosed in the other workings west of that?

A. I would say they are one and the same vein.

Cross-examination.

(By Judge BOURQUIN.)

The WITNESS.—I first visited this Butte and Boston placer on the 15th day of December, 1911.

(Testimony of H. A. Bowman.)

The first place I went in was tunnel 34; that is the Mullins' tunnel.

I was in shaft 21; I found it was about three or four feet in bedrock, and about a hundred and ten feet deep. There is a lot of talc in that shaft, rather highly stained with iron, that I would call ledge matter. I should judge the material in there was a class of porphyry. I did not see any granite. I do not know anything about aplite. I did not see anything when I was around the Bluebird that looked anything like the material in the bottom of that shaft. I cannot say that I know what is termed in this cap as Bluebird granite. The whole bottom of the shaft is in lead material. There is no cross-cut or drifting. I did not see any indications of copper in [333] that material; stained iron, that is all. There was not an opening there large enough for a person to determine the strike or dip. It is a capping of a vein in my opinion. Vein matter is the material contained within a vein. Whenever I find material that looks well stained with iron, and all that, and softer than I would expect to find the country rock around; I would consider it a vein, yes, sir. There is not any country rock around this, but knowing the country rock around Butte and the outcrops I have seen in the different veins in Butte, I should consider that the outcrop of a vein; that is my only reason for thinking so.

I then went up to tunnel 30. We went down and into the east face of it and out; went into that cross-cut going north and then came back and went through

(Testimony of H. A. Bowman.)

the one going south. In that cross-cut going south, the material there is different than it is in the north cross-cut. In the south cross-cut I broke off a piece right near the face, and I call it a quartz porphyry. The whole formation was similar to that for most of the distance of the south cross-cut. All that appeared to be standing there in place was well stained, and it being different from the other formation north of it—and right in the face of the south cross-cut there was a rib of ore running across it that had been left standing, about a foot high or a foot and a half, and I concluded that looked like the capping of a vein. Not the whole of the south cross-cut, but near the face of it, right in the face. There is no south cross-cut shown on that map; that is it there on Complainant's Exhibit 14, about twenty-five feet from the face—the cross-cut being about seventeen or eighteen feet long. I do not think all of it is the material I term quartz porphyry; I should judge about five feet of it. Right at the face of the cross-cut there was this rib of what I call quartz porphyry coming up. It appeared to be about of the same character as the other quartz porphyry. There was no cleavage plane between that rib and the other quartz porphyry. I do not call quartz porphyry ore, but I saw it mineralized there in that, and I thought it might be a change in the other formation, and I thought if it was probably opened up further, it would lead to a vein; when I say it was mineralized, I mean it was iron stained, rusty; it was very close [334] to the surface. The country rock near the surface in the Butte camp is not

(Testimony of H. A. Bowman.)

generally iron stained; it is usually stained a little bit, but where there is a vein, it is much more highly stained than where there is not any vein. I took this quartz porphyry as the filling of that vein; it had not been crushed, it appeared to be in place.

I did not go in shafts 1 and 2. I was out there a good many times preparing for this trial. Mr. Watson was with me most of the time; once or twice I was out there alone, and other times I was out there with different parties. The first day I went out, Mr. Clark and Sam Barker were out there, and they started in to show us around. There were quite a number of people in the crowd, and before the last ones could get in a hole and look in, the first ones would be gone, and I got mixed up and happened to be one of the last, and got separated from the crowd, so I went into the different ones as I came to them. Mr. Clark spoke to me Saturday about going down in shafts 1 and 2, but I came away without looking at those two shafts.

I was in tunnel 31. In the north cross-cut I saw a vein; it crossed the cross-cut in an easterly and westerly course. I did not have a compass; in crossing, it appeared to be a little bit farther from the tunnel on the west side to the vein than it was on the east side; otherwise it was nearly at right angles; that is, you could stand in the tunnel this way (indicating) and look at the face of it, and on the west side the vein appeared to be more in front of you than it was on the east side. Standing in the cross-cut at the vein and looking directly at the face of the tunnel, on

(Testimony of H. A. Bowman.)

the west side the vein would be in front of me, and on the east side it would be right back opposite me; that is how I judge its course. I saw a footwall there, but I do not know whether it was the true footwall or not. I saw the southern boundary of that vein. It was about twenty-two feet from the tunnel. I did not see any indications of a vein, or a footwall, near to the tunnel than at that point. The country rock there appeared to be mineralized and stained up considerably; I should call it granite; it was stained with iron, but did not have any copper stain that I could see. I looked along there at different times as I went through, and did not find any copper [335] stain until I got in there twenty-two feet. The first was a foot or so of good-looking ore; beyond that it was ore of lower grade. It might have been a granite at one time. It appeared to be stained up, mixed up so that I would call it ore. It was not crushed to amount to anything. It didn't look like it had been put through something and ground all up; it looked in place; it was stained with copper; there was also iron stain through that. I took all that to be ore. That was as far as that cross-cut went at that time, and the face of the cross-cut was in ore, as it stopped. As I saw it last, it went along about the same grade of ore for four or five feet, and then there was another streak of higher grade ore, and beyond that laid the granite. This other streak next to the granite was about eighteen inches wide. I gave the vein at that point an easterly and westerly strike. You cannot determine the strike accurately. The strike of

(Testimony of H. A. Bowman.)

the vein winds in and out. It may be pointing to the south more at one time than it will at another, and in another place it may point more to the north. That is, my experience underground has been that going along a tunnel on a vein, it is not very often that you will find a distance of over a hundred feet, or something like that, or two hundred feet, where you can stand and see the light of a person that far ahead. Usually before you go that far, there is a bend so that one will be out of sight; it will vary a few degrees. I never saw a vein that run part way northwest and then varied to the southwest; I have seen a vein that run in what was called an easterly and westerly course, that is a slight strike south of east, and then turn around to a strike almost northwest; I have seen one right here in Butte do that, but they usually vary a few degrees.

I went into the cross-cut southeast of tunnel 31—the first cross-cut. I found country rock in there. I looked through it and it did not appear to show any mineral, and I just took it to be country rock.

I saw the vein next in tunnel 31 about thirty-three feet in the tunnel from the north cross-cut; I saw it on the north side where the tunnel was just disclosing it again, coming from the north. There is one place there shows nearly two feet of the vein, I should [336] judge. There is a hole picked in there, showing the vein about a foot in width, and then as you go east it will probably vary and get a little bit wider. It continues about twenty feet, then there was a fault that cut it off. I was not able to determine which

(Testimony of H. A. Bowman.)

way the fault had thrown the vein. I think I saw it right up to this fault; on the other side I could not see it.

I went into the cross-cut on the south side, near the face of the tunnel; it showed considerable mineralization, copper and iron stain. The country rock was granite; part of it would be more stained with copper than others. I thought I saw the hanging-wall in the face of the tunnel. There is a point where that cross-cut goes south, there is a slip coming in from the north side of the tunnel, running into the face of the tunnel that I took for one of the walls. It is dipping to the north; I consider it is all ledge matter on the south side of it, back to the south cross-cut and probably to that fault. I suppose you would call that slip in the face of the tunnel a fissure; I suppose all walls are formed by faults; all walls of veins—that would be the way I would look at it. My understanding is that there would have to be a fault originally to form a vein. The course of that slip as I saw it was more to the southeast, I should judge, than the course of the vein as I saw it in the north cross-cut and on the north side of the tunnel beyond that cross-cut. That slip was a little south of east in its strike east. The dip appears to be flatter there than it was in the north cross-cut, several degrees. That wall there was granite. I did not pick into it.

I then went to the Rabbit Discovery; at the bottom there was an opening running west, and in that I saw a stringer varying from two to four inches, of highly stained copper material. There would be some

(Testimony of H. A. Bowman.)

quartz in it. I would call it a decomposed granite. The country rock was granite. I think I was in that tunnel only once.

In those various explorations I was making along through the Hornet and these other places, I simply had a pick with me.

I say this streak I saw off in the opening off of the Rabbit Discovery shaft did not appear in the east side of the shaft; I did [337] see it; the east side of the shaft was all full of snow; nearly all of the east side of the shaft. My recollection is that I threw the ladder down on the snow. I mean the snow filled the east side of the shaft. There was just a hole big enough for me to get in, and that was all. This bank of snow filled this Rabbit Discovery shaft on the east side from the top to the bottom on the day I was out there. I did not pick into it at all.

The next place I visited was shaft No. 9. On the north side there is a cross-cut about twenty-five feet from the surface. I found a good showing of a vein in there, probably three feet north of the shaft. There were two stringers about four feet apart. They would vary from an inch, or a couple of inches—that was the richest part of them—and then the material in between was mineralized, copper stain a little bit, only not so much as those streaks. The material between was granite and some talc mixed in. The country on the southernmost streak was granite. The dip was nearly vertical; slightly to the north. Those two streaks would not come into the shaft in my opinion, unless they changed their dip. I have

(Testimony of H. A. Bowman.)

not seen the shaft with the lagging removed. The northern side of these streaks was granite. The streaks there had an easterly and westerly strike; from looking at the shaft, I should judge the strike was to the south of east; I would not say whether it was one degree or five, but not more than five.

I went into the Vesuvius, and the north cross-cut from the Vesuvius. About thirty-one feet north of the Vesuvius shaft I saw a stringer of ore, and about six or seven feet north from there was another stringer that was about thirty-one feet from the south face of the cross-cut. The most northerly streak was about eight inches wide; the other one would be from four to six inches wide. The material composing them was what I would call a low grade of copper ore. The material lying north and south of them was granite. These stringers were about six feet apart; the material between them was nice appearing granite all stained a little with copper. It was also stained with copper on the north and also on the south a little bit. Those streaks had what I call an easterly and westerly strike. The one on the north side, if I remember correctly, dips slightly to [338] the south, and the other one was nearly vertical, but I would say it favored a dip to the north. That is all I saw in the north cross-cut.

In the south cross-cut, twenty-six feet south of the shaft, I saw a vein, about eight to twelve inches wide; it was copper ore. There was quartz in it; the rest of it would be granite, crushed granite—disintegrated or cracked granite.

(Testimony of H. A. Bowman.)

Q. Between the southernmost stringer in the north cross-cut and the Vesuvius shaft, and this stringer that you saw in the south cross-cut, about how many feet apart were they?

A. The northern one is thirty-one feet north of the north side of the shaft. The southern one is twenty-six feet south of the south side of the shaft. That would be fifty-seven feet of that shaft, I should judge, would be probably five or six feet. I did not measure the shaft.

The WITNESS.—This stringer I saw in the south cross-cut had a strike a little bit south of east; it would trend northwest and southeast.

Q. I think that after you had described the openings and the veins, or suggestions of veins that you saw in them, in shaft 21, tunnel 30, north cross-cut of tunnel 31, and the face of 31, the Rabbit Discovery shaft 9, and the Vesuvius, you said that in your opinion they were all one vein?

A. I said it would be reasonable, in my opinion, that you take all those openings—that it would be reasonable for a man to think that he had his openings all on one and the same vein.

The WITNESS.—When I was tying up the disclosures in the western openings with the Vesuvius cross-cut, I was considering the vein I saw north of the Vesuvius shaft. I do not think I was asked anything on direct examination about the north cross-cut, but I think I was taking the ones on the north side into consideration, because I saw some other openings between the Vesuvius and the shaft No. 9,

(Testimony of H. A. Bowman.)

that the dumps showed a mineralization. Those various openings could be on different veins. They might be different veins. It might be reasonable for a man to suppose as soon as he had a discovery, and one off a few feet farther, and cut a vein and [339] followed another, and at a short distance got another—it would be reasonable for him to suppose he had one and the same vein. If you would look at the vein as it crossed the north cross-cut from tunnel 31 on its course west it would run a couple of hundred feet south of shaft 21, but shaft 21 is a hundred and ten feet deep, and you take this vein here at the depth of a hundred and ten feet, and it would be considerably farther north than it is shown in that tunnel, and that would consequently throw this vein here at a depth of a hundred and ten feet, considerably farther north than it would be on the surface, but I do not know how far. I could not say how many degrees from the vertical the inclination was in the north cross-cut from tunnel 31. I did not have an instrument to put on it to get the correct dip, and then it may vary; the dip is not always uniform. The vein south of the Vesuvius discovery may be a different vein from the north vein, and they may be all the same vein. I do not know as there is development work enough to segregate each of those streaks as a separate vein; they are over fifty feet apart, but there is not enough work done to determine whether they are one and the same vein.

I do not consider the veins in the Vesuvius one vein; I said they might be, and I said the two on the

(Testimony of H. A. Bowman.)

north might be one vein, and the one on the south another.

I found shaft 19 about ninety feet deep. I found there what I call mineralized matter and good evidence of a vein. The wash there covered everything but about four or five feet of the shaft. There is lots of talc in that and some quartz; the rest of it was similar to the material in 21; some of it is disintegrated granite. Some of the talc was blue, about the same color as the talc you find here in the copper veins, and others of it was white, and some of it was well stained with iron. I would consider that blue talc would carry a copper value; a trace to half of one per cent. This material filled the entire bottom of the shaft. I saw no strikes or dips there. There was neither cross-cuts nor drifts at the bottom.

Q. Could you give us any idea if those are veins in 19 and 21, how they happened to strike right on top of them?

A. Well, sir, that Hornet vein is a large vein. The way it is [340] opened up there in the Hornet tunnel shows over thirty feet back in the shaft, and they have got the strike of it there for a considerable distance, and opened up those tunnels below, and I do not see anything remarkable in sinking that shaft 19 and striking the vein.

The WITNESS.—Veins will vary a few degrees and then the other way a few degrees, but it will come back close to a straight line. I do not mean an absolutely straight line, but what you would look at and call the strike of the vein, if you line those openings

(Testimony of H. A. Bowman.)

up. They are in deeper there in some places than others, and consequently that would throw the apex of that vein farther north or farther south, if it was right in a straight line.

I was in tunnel 35. Right near the face of that there is a short cross-cut going north. It has just reached the solid formation exposing granite. I would not say whether it was a vein or not, with the little work done there. It shows a few streaks highly stained with iron running through it, but I would not say it is a vein.

In Tunnel 36 I found numerous stringers of quartz in the granite, and it is considerably stained with iron. Those stringers were probably an inch in width. I do not know they were aplite. I do not pretend to know what aplite it. When it shows as much quartz as that shows I call it quartz.

Tunnel 35 is pretty well on a straight line with shaft 19 and the Hornet. I think they will strike the vein there if they do a little more work. I think they would have got the vein in tunnel 35 if they had done a little more work—they are just practically in the wash—just got to the bedrock. The vein might show there, and it may be a poor place in the vein and not show very well right there in the tunnel; my idea is that it shows the vein.

Coming back to tunnel 36, I think these quartz stringers showed the outcrop of a vein. The balance of the material between and on the sides of those stringers is granite, the regular country rock. I did

(Testimony of H. A. Bowman.)

not count all those stringers, but I noticed they were quite plentiful.

[341] In the north cross-cut, sixteen feet from the face of the cross-cut of tunnel 37, I found what I consider copper ore. I think it was a decomposed granite. I could not say what the country rock on each side of it was. Most of it was covered up. I did not examine it very closely. I was just picking along there to see if I could find any indications of copper there. I do not know what the country is on each side of that streak of decomposed granite; it was highly stained with copper. North of that streak of decomposed quartz sixteen feet from the face of the north cross-cut in tunnel 37 I consider all vein matter, filling, or low-grade copper ore—the outcrop of that vein. I did not stop to examine it closely to see whether there was any quartz in it or not. I do not know whether it is aplite again on that north side of that streak.

I went into the Hornet tunnel. I do not know as I measured the distance to where I first encountered the lead. I think the distance from the first set of timbers into the bedrock is thirty-eight feet, and as soon as I struck bedrock, I noticed it all showed copper stains. I did not measure the distance from there into the Hornet Discovery; it was nearer the mouth of the tunnel than that cross-cut going south. On both sides of the tunnel it appeared to be stained with green stain; all low-grade ore. I determine that it is ore because it has green stain, and it shows copper values. I have never found the green stain out

(Testimony of H. A. Bowman.)

in the country rock, not in the veins. I have in some of the old cross-cuts after they have been opened up in the workings awhile, and see that green stain on the sides of it, near the vein. Just a slight green stain on the outside of it would not make it ore; that is, it might have copper precipitated enough on it to make copper ore out of it, but I would not consider that mining.

I do not know how long this tunnel I went in on the Hornet shaft had been opened. I picked in there and found it ore as far as I picked; it continued from where I struck bedrock clear in to the face of the tunnel. At the face of the tunnel it was green stained, but very slight; I did not call that ore. If it is stained so that it would make a milling grade of ore, I would call it ore. Anything [342] that could be treated at a profit would be milling ore; between two and two and a half per cent copper. I consider the green stained material along there would go that high. I did not have any of it assayed. I saw what had been left there for the footwall of the vein, along the tunnel east from that cross-cut, going south, clear to the east of the face, on the north side of the tunnel. The footwall lies on the north side; I think the face is in the footwall. There is a small seam on the south side of the tunnel, and they broke into what I thought was possibly the footwall. The footwall would appear right in the back of the tunnel at the face. I do not think it would go as far back as ten feet from the face. I mean that the tunnel is entirely south of the footwall there. I think it

(Testimony of H. A. Bowman.)

crossed the tunnel in near the face. In this tunnel, near the face, I took Exhibits 66 and 67; that was from the back ten feet west of the face. I did not take that sample off of the footwall. I took it out of the back of the drift. I think it was on the south side of the footwall. It showed ore where I got the sample, and I took it for granted that the footwall was still farther north. It is rather the same as Exhibit 67. Exhibit 67 is low-grade copper ore; it is granite stained with copper. I took Exhibit 68 from the hanging-wall right south of where I got the other one; the same distance from the face of the tunnel as the other one. I took it from the south side, in what had been left there for the hanging-wall. I picked into the wall. Exhibits 67 and 68 are approximately the same, soft granite, stained with copper. I then went into the upper cross-cut from the Hornet tunnel, and on the east side of that cross-cut, about ten feet from the tunnel, and took Exhibit 69. This is granite stained with copper. The cross-cut is all covered with the same character of material as Exhibit 69. It is in the bottom; you will not find it in the back; the back is in wash. The bottom of that cross-cut is of a much higher grade of ore than the piece I brought. These samples I brought in, 67, 68 and 69, fairly represent the material in general from where I took them. They do not represent any of the rich; they represent about the average of the mass. I took about what the cross-cut would average. I think Exhibit 69 from the upper cross-cut is a fair average for that cross-cut. There [343]

(Testimony of H. A. Bowman.)

were streaks that would go higher than that; there are several of them. The whole bottom appears to be richer than that, and below where I got that specimen was a richer streak, and on the west side there are several streaks running through there that appear to be richer from the tunnel to the shaft, a distance of about thirty feet. The mineralized matter I saw on three sides of the shaft itself would be about the same as Exhibits 67, 68 and 69. That would show a higher grade of ore than that, and other would be lower, but I think an average would be shown by Exhibits 67, 68 and 69 of the general mass. If you would start in and take it, and cut samples from top to bottom, I think it would.

I did not see any wall in the Hornet shaft. I do not know as I could see a wall on the south side at the bottom. There is change in the formation, which probably, with development, would show that it was the wall, but I do not know. I just noticed it was a change in character from the rest of the rock.

I also went in the little drift running westerly. The material on the sides was granite; right down in the bottom was this change of formation that I told you I saw in the south side of the shaft; it was reddish in cast, and did not show any copper values in it, to look at it with the naked eye. I would term that as appearing to be a wall on account of the change in formation; that was the only reason. Finding that formation I would conclude the wall was there.

Q. Why is it in the north cross-cut from the tunnel

(Testimony of H. A. Bowman.)

31, when there is a change in the material from what you have termed to a granite in the face of the cross-cut, that you do not conclude that granite in the face of that cross-cut was a wall?

A. It shows no line or slip there, or cleavage, that I would consider a wall.

The WITNESS.—I have not concluded that it is a wall. A vein is a seam or fissure of quartz or other rock in place, bearing minerals—bearing gold or silver or other minerals. It must have boundaries to constitute a vein.

Q. And you claim you have not found any of the boundaries of the ore body you say is in the Hornet tunnel and shaft?

[344] A. I stated there was a change in the formation on the south side, in the bottom of that tunnel. It looked as though they had come to the south side of that ore body, and on the north side I do not know whether that is the footwall or not. I would not say whether it was or not, unless there was a cross-cut driven north of that, to show that there was not anything north of it.

The WITNESS.—The change of the formation that I have mentioned in the Hornet Discovery does show in the drift in the bottom. It is only opened up two or three inches above the bottom of the tunnel level; it may possibly be six. I did not measure it exactly, but I noticed it was just run along there to a point.

(Signed by the witness and sworn to before the master January 11, 1912.)

**[Testimony of Pat Mullins, for Plaintiff.]**

PAT MULLINS, duly called and sworn as a witness on behalf of the complainant, testified as follows:

Direct Examination.

(By Mr. SHELTON.)

The WITNESS.—I live in North Yakima, Washington; I have lived there six years. I lived in Butte from October, 1881, until May, 1905. I have been interested in mining and other business in Silver Bow County about twenty-four years. I at one time conducted mining operations on the Wild Bill, one time on the Comanche in 1893, the Gambetta in 1893 and 4, I guess. These mines are situated on what is known as the Butte Hill. There are several more, if I can recall them. One Heinze had afterwards, right up the gulch here, the Nipper, and several more, the Rock Breaker, east of the Columbia Gardens.

I know where the ground is known as the Butte and Boston placer. I knew of the Pleasant View location. I was interested in it. I had an acquaintance with the ground. I was first familiar with it in 1894 and '95. Louis Mason was a co-owner in the Pleasant View. Levi J. Hamilton was interested with me, and Charles F. Passmore. I think I bought Passmore's interest prior to the time a deed was given to the owners of the Butte and Boston placer in compromise of the controversy between the Pleasant View and the Butte and Boston [345] claim. Mr. Mason retained his interest. Prior to

(Testimony of Pat Mullins.)

making the compromise, I made an examination of the Pleasant View Discovery; I made an examination of all the discoveries there was to be seen at the time. In my judgment there was no vein disclosed in any of those discoveries. I think I met Mr. Mason just prior to the date of the trial of the placer against the quartz, probably a day or two, or maybe several; I don't know, but I will explain myself a little more. At the time I bought Mr. Passmore's interest, I do not know that I knew of a claim against the property by placer, but afterwards, I did learn there was a claim about a suit that was coming up. Apparently, before my time, the placer people was adversed by the quartz people. The placer people on the placer claim was the Butte and Boston placer, and the adverse was the Pleasant View quartz claim. I had bought into both of them. Before this compromise and settlement was made, there was a conference of the people that were interested in the Pleasant View claim. I don't remember all of them were present or not, but the majority I think were, and maybe all of them. I know Mr. Hamilton was there.

I knew a prospect hole that was afterwards called the Hornet Discovery. I made an examination of that hole and there was no vein disclosed in it. The first examination was made about the time there was a little hole there, previous to the time of my buying in there, or several holes over the surface, and might be they was sunk deeper since then. I know it was cleaned out some and sunk deeper since that

(Testimony of Pat Mullins.)

time. I knew that ground in 1895, probably in March and before that time, the latter part of 1894. In 1894 I was working the Rockbreaker, which is east, probably a mile or more, and I had boned it, or was doing considerable work. That is how I come to get familiar with the ground. I remember the time of the hearing in the District Court for an injunction against certain work that was being done there; that was in about 1895 or later. The injunction was in 1900. I made an examination of the Hornet Discovery about that time. There were no veins in the Hornet Discovery at that time. I know the tunnel that runs in an easterly and westerly direction a short distance north from the Hornet shaft. I knew it several years. I [346] afterwards sunk a shaft from the bottom of that tunnel to a hundred and fifty feet, or maybe more, and raised that shaft that I sunk to the surface, which would probably be thirty feet, where we placed a hoist. It is an incline shaft. It is following the vein. The vein and vein matter is probably about from four to six feet wide where the shaft is sunk. There are walls of the vein shown there, both the foot and hanging-wall. The hanging-wall is especially well defined. The footwall may be a little more broken. I did stoping. I ran drifts east and west on the vein, probably seventy-five or eighty feet to the east and maybe the same distance to the west, and then cross-cut to the northeast probably a hundred feet or more. In the drift to the west the vein showed up, and to the west about seventy-five feet or maybe a little

(Testimony of Pat Mullins.)

better we struck a fault, what we called a fault, that cut off the vein, and it was a talcy, muddy, slushy,—we kind of blocked it up to keep the mud from running in until it drained off, and I think on the seventy-five foot level we might have crossed that vein and had some vein matter, and took out a little ore, but I don't think we crossed it on the lower level. I stoped out the ore on the east side for the distance I have mentioned. When the ore was removed, the walls of the vein were shown there. They were well defined; the walls of the vein were porphyry granite. At the time we did the work there, they were a cross-cut to the northeast that went east probably about seventy-five feet. Then we cross-cut to the northeast for a considerable distance, looking,—in going to the east, I think the vein broke, and then we cut it to the northeast. We run that cross-cut in the broken, streaky granite,—porphyry; that was what we called the country rock. On the south we run cross-cuts some short distance; they showed the same country rock. I know the cross-cut that is run to the south from the tunnel; it leaves the tunnel a short distance west of the shaft. It runs into the Gulf and Hornet shafts; I know the cross-cut from the Hornet shaft into the tunnel. That is run in country rock. It is streaky the same as you will find in most any of this granite, towards the surface.

[347] I don't know what you mean by the Gulf shaft. I know the Hornet shaft and the cross-cut from the Hornet shaft to the north, where it cuts the vein. The vein was shown in the tunnel. The vein

(Testimony of Pat Mullins.)

and vein matter in the tunnel is anywhere from three to six feet wide. That is the same vein we sank on and took out the ore. I examined all the holes and all the openings that was on the ground prior to the time of buying into the quartz, which would be along in March, probably, 1895,—the latter part of '94, I was working on the Rockbreaker and was familiar with that ground all through there, and I think I first purchased from Mr. Passmore in January or February, 1895. At that time the vein that is shown in that tunnel was not exposed; there was no vein exposed on the property that I could see.

Cross-examination.

(By General NOLAN.)

The WITNESS.—I have not been on the ground in the last five years; well, yes, I will take that back. I passed over the ground maybe once or twice along in 1907, was the last time, but paid no more attention than walked over the ground. I have not been there since. I made an examination of the ground in 1900 and 1901; at that time I was a party to a lawsuit. I and Mr. Kemper were interested in this lease that we afterwards worked. This tunnel was there in 1901 when I made the examination. It was probably in two hundred and fifty feet,—beyond the point where we afterwards sunk the inclined shaft. There was a cross-cut there from the Hornet Discovery extending to the vein. There was a cross-cut there at that time extending from this tunnel to the Hornet Discovery. I think the location of the

(Testimony of Pat Mullins.)

Hornet Discovery, as they claimed, was involved in that lawsuit. We raised the question then that there was no discovery, in that lawsuit,—no discovery in the Hornet shaft. I know where the lead was discovered, about twenty feet north of the Hornet shaft. The locators of the Hornet lode claimed that they made the discovery in the Hornet shaft, as I understood it. I first became interested in that ground by purchasing Passmore's interest; afterwards I purchased one or two other interests. I bought an [348] interest from Hamilton and also from Mrs. Hopkins. I obtained the Passmore interest about the fore part of 1895. When I purchased the Passmore interest I do not think I knew there was any contest at all on with the placer locators. I went on the ground and made an examination of the ground before I purchased the Passmore interest. I went there for the purpose of looking over the ground, for the purpose, if it suited me, and if I wanted to purchase it, why on my judgment I would do so. I made an examination of the ground. I made the examination for the purpose of buying or bonding. I forget now what I paid for the Passmore interest, several hundred dollars though, maybe less than a thousand and maybe less than five hundred. I could not recall now. There was evidence of quartz on the ground, scattered in the ground, in the soil, but up to that time they had not discovered a vein in place.

Q. Well, if as a matter of fact they had not discovered any vein, and you knew it, why did you pay

(Testimony of Pat Mullins.)

any money for it? Passmore had not acquired a title to it, had he?

A. Well, there are many things that a man will sometimes buy and yet,—I was satisfied to take a chance.

The WITNESS.—I was satisfied to take a chance to buy his right to his interest; his interest in the quartz claim.

Q. And you knew, of course, if there was not any discovery there, that you were not getting anything?

A. Well, I might have had something else in view; I had an idea that in further development, we might,—

The WITNESS.—We might have thought that there might be a volcanic shaking up of the ground there, sure. By further development work we might discover something, but up to that time we had not the vein. There were several openings on the ground there, probably half a dozen all told, that I made an examination of, scattered over the ground. There were several small pits sunk in the neighborhood of where the Hornet Discovery was afterwards made. We will say two or three. I could not say how far apart they were; I did not measure them. The Hornet may be a part of one of them holes since then cleaned out and probably sunk a little deeper. I think I went into the Hornet; I went into several holes. I am [349] pretty well satisfied I went into the Hornet. That would be along the fore part of 1895. It was ten or twelve feet deep then. I think we went in by a ladder. I don't know who

(Testimony of Pat Mullins.)

was with me. Mr. Passmore might have been with me; some of my men might have been with me. I think there were two persons with me. I do not know who they were, but am pretty sure Passmore was one, and possibly Mason.

After I acquired the Passmore interest, I acquired the other interests anywheres from probably a month to six weeks, maybe less, afterwards. I was desirous of getting more than the Passmore interest, when it got cheap enough to suit me. I paid probably six or seven hundred dollars for the other interests, maybe a thousand dollars. I acquired either a third or fourth from Passmore, I ain't positive which now. I had five-eighths, I think, in the proposition.

Q. Well, now, do you know whether or not there was any placer claim upon the ground when you had filed the other interests?

A. I did, before I completed the final purchase on the quartz. I knew there was an adverse by the quartz, too, on that place before I purchased the Hamilton interest.

The WITNESS.—I knew there was an adverse by the quartz against the placer. I did not know that when I acquired the Passmore interest, but I did when I acquired the other interests, so that altogether I have paid probably fifteen hundred dollars for the five-eighths interest, and at a time when I knew there was not any quartz lead disclosed on the ground. This Hornet Discovery—this hole that was ten or twelve feet deep—was not below the wash.

(Testimony of Pat Mullins.)

A short distance to the south there was another hole, and in a short distance there was another one. If I recall, there were three. The one to the south was probably a hundred and fifty feet, a hundred feet, from the Hornet discovery shaft so called. I went into that. It was eighteen or twenty, maybe twenty-two or twenty-three feet deep. That was not down to bedrock. The hole to the north was about the same; I do not think it was as deep. I do not recollect now how far this hole was to the north of the Hornet discovery,—considerable distance though; probably a hundred and fifty feet. That was not down to bedrock. Neither one of the holes there at the time was down to [350] bedrock; that is my recollection about it. I told you the Hornet Discovery was sunk deeper since that, but I don't know when it was. It was sunk and a cross-cut to the north eighteen or twenty feet, and the level run probably a hundred and fifty feet on the strike of the vein before I ever went out there or knew anything about it. My attention was called by somebody on the street that there were a party of men working on the ground, and I went out there and found four or five or six men, including Mr. Mason,—was one of them,—working in the tunnel. It might have been in the month of March of the year 1901 or '2 that I went out there, to my best recollection. I had not been out there for several years before this work was done, probably three years before 1901. I think the work was done in 1901 or 1902. When I went out there the Hornet Discovery was probably

(Testimony of Pat Mullins.)

seven or eight or ten feet deeper than when I saw it in 1895; that would make it eighteen or twenty feet deep, I should judge. They had not reached permanent bedrock then. I don't know whether it was sunk any deeper since I lost track of the ground. I said there was a cross-cut from that shaft at that depth when I saw it in 1901 or '2; it was run to the north, kind of northeast; pretty much on the level of the tunnel.

Going back to the purchase of this property in 1895, after I bought in I was in that litigation. I made the last purchase a couple of days before the case came to trial, and the case was dismissed and judgment taken against the quartz owners. I think the settlement was made a day or two before the case came to trial. At the time I bought in, I bought an interest that was involved in the litigation. The suit was pending and it was conducted upon the principle that there was a quartz lead known to exist by the quartz people. I knew that we had not discovered a vein, but I had my ideas as to further development. I did not know where further development would disclose the lead. I had an idea that we could effect a settlement.

Q. You were not getting the land, were you, because it had any values for townsite purposes, or building purposes?

A. Well, I thought I might go out there and raise strawberries.

[351] The WITNESS.—No, I will take that back. It would not in them days be any more valuable for

(Testimony of Pat Mullins.)

townsite purposes than for strawberries. I did not acquire the interest because I had an idea it was valuable for placer purposes.

Q. So that really the reason that you did acquire the property, or the interest, was because you had an idea that there was quartz there, or that there was a quartz lead?

A. I had an idea that a settlement could be made with Mr. Kemper,—a compromise could be made,—and while we had not discovered a quartz vein at that time, that it would be worth the amount of money that I was investing in it, what I would get in the compromise.

The WITNESS.—I was taking my chances of discovering a quartz lead afterwards. There were only three holes I examined. I think I examined everything that was on the ground, but do not know whether I examined the discovery of the Pleasant View. I am prepared to say that there may be several holes, but all holes I will include now, that was on the ground at that time were examined. I don't know where the other holes were. I examined all the holes I could see on the ground. I told you there might have been three, and might have been six, and there might have been nine. I examined everything there was there. There was not fifteen, and you can't find them today. I won't say there were nine. I will say there were three and probably six. The other holes were in about the same condition as the three I have told you about. Some of them were probably eighteen or twenty feet deep;

(Testimony of Pat Mullins.)

none of them had got to bedrock.

Q. Well, seeing that there was not any lead at all, how was it that you were able to get a portion of that ground from Mr. Kemper?

A. Well, Mr. Kemper had a placer location there, and had applied for his patent. The quartz people had adversed the patent, and under the compromise the quartz people got about one-third of the ground to the east, on this compromise, and let the placer people take judgment and go to patent.

Q. That is to say, you were willing to be a party to a fraud in connection with getting title to that ground from the Government?

A. No, sir, don't you understand anything of the kind. I ain't [352] going to answer your bullying way at all. I was not party to a fraud. If I was a party to a fraud, I would have fought Mr. Kemper to a finish in the courts.

The WITNESS.—I knew that we had not made a discovery of a vein. You bet I was mining man enough to know that. I certainly knew that without the discovery of a vein I had no claim to the ground at all. I don't know anything about the location of that ground immediately after the settlement was effected by a fellow named Lee Davenport; I don't know anything about the location of the ground as the Lynne location. There is so many locations been there, that I did not pay much attention to them.

I do not think this five-eighths interest that I acquired before the settlement was made cost me about four thousand dollars; we might put it at two thou-

(Testimony of Pat Mullins.)

sand. The settlement was made in March, 1895, I think. A few days before the settlement, I acquired the deed, I think, from Hamilton and Mrs. Hopkins; the Passmore interest was first, and that was some time prior to the settlement, agreement or a deed in escrow,—I forget which. The deed I got from Kemper pursuant to the agreement would be probably one or two days after the settlement was effected. We either got a deed, or agreement for a deed, when he would get the patent. I rather think probably it may have been an agreement. It might have been a deed, or it might have been an agreement one or two days before the case came to trial. I think I got a five-eighths interest in the ten acres. I think Hamilton held an eighth, Mrs. Hopkins an eighth. I think Mason had an eighth. After I got this five-eighths interest, it was probably six years afterward I went to work on the ground, after the settlement was effected and before this five years had run that I spoke about. I done some work, but Mr. Mason and a man by the name of Merriman done some work there in 1901 or '2, or along there. After that I done work on the ground. I did not put up any money for representation work after the settlement was effected.

Q. Well, if, as a matter of fact, you paid your money for the ground, how was it that you did not go to work and try and find out whether there was any lead there or not during all of this time?

[353] A. I probably did not have any money to

(Testimony of Pat Mullins.)

squander at that time, to go there, and it did not look good to me.

The WITNESS.—It might not have looked good to me to spend money for development work. In 1901 or '2 there was a discovery of a vein there. The discovery was made in the tunnel. I permitted the ground to remain idle until this discovery was made. After the discovery was made, I commenced operations, me and Mr. Kemper. I think Mr. Kemper and I worked it according to our interests on the start; afterward I took a lease and bond and worked it myself. Mr. Kemper to start with was the owner of two-eighths; Mrs. Hopkins an eighth, and I had five-eighths. I don't know how Kemper got his interest. He got one interest from Mason, and he had an eighth. We knew that there was a lead in the tunnel, and that is the lead we worked on. I did not take any steps to protect my interest in the quartz lead. We knew that so far as the quartz lead was concerned, our title resting upon a placer title, we did not have any extralateral rights at all. We did not locate the ground as a quartz claim. There was some valuable ore there.

Q. You took out quite a good deal of money, didn't you?

A. Oh, not to retire for life; took out some ore and got some money out of it.

The WITNESS.—I got sulphide ore there. I remember testifying in the case of Butte Land and Investment Company, Pat Mullins, Levi Hamilton and Olivia H. Hopkins against R. O. Merriman,

(Testimony of Pat Mullins.)

Louis Mason, John Maginnis and F. Aug. Heinze.

Q. I will ask you if you did not testify as follows in that suit?

"I took samples in four different places, for a distance of about a hundred feet across the lead, We found from four to nine per cent copper. That was an average sample at each place of about two feet. I would say that is the value of the minerals contained in the ore."

A. If I testified a hundred feet across the vein, it is certainly not correct, because there ain't no vein a hundred feet wide there. If I testified on the run of the vein, a hundred feet, I took four samples, it might be true. That testimony was a hundred feet of the run of the vein, not across the vein. That is [354] wrong.

The WITNESS.—At that time the lead in my judgment was a valuable lead to continue developing, and I continued for some time in developing the property. I am not interested now. I disposed of my interest six or seven years ago. I think the owner now is the Amalgamated. I don't know what I got. It was sold with other interests. I probably placed a value on it of about thirty thousand dollars in disposing of it with other interests. I was on the ground quite often myself at the time these operations were carried on there. I sunk the shaft to a depth of a hundred and fifty feet or perhaps more. I do not know what became of the Hopkins interest. She was not interested; she did not pay a dollar for any operations. She probably

(Testimony of Pat Mullins.)

got some royalties under an agreement.

Q. I will ask you if you did not testify as follows in the hearing that I have reference to in 1901:

“Q. When did you first know the shafts which are now sunk upon this location? A. I do not know that I ever entered them, not to go down there.”

A. I suppose I did, if it is there.

Q. Well, now, if you did, why do you tell us here that you went into those shafts in 1895?

A. I went into those shafts that was there in 1895.

Q. Well, if you did, why did you testify as you say you did in 1901? A. I don't know.

Q. I will read your testimony. You were examined by Mr. McBride.

“My business is mining, and in the business of merchandising. I have been in mining for 28 years; in Butte, Montana, for about 20 years. I am acquainted with the ground described in the complaint; and a portion of the Butte and Boston placer; I have known it since 1895. I have made an examination of the workings of these defendants on that ground, and found a lead containing ore. I took a sample of it. I took samples in four different places for a distance of about 100 feet across the lead. We found from four to [355] nine per cent copper; that was the average sample at each place of about two feet. That is the value of the minerals contained in the ore.”

“Cross-examination by Mr. MACKEL.

The WITNESS.—I have been interested in that ground since somewhere about March, 1895, I think,

(Testimony of Pat Mullins.)

maybe a little prior to that time. Q. When did you first know these shafts which are now sunk upon this location? A. I don't know that I ever entered them, not to go down them."

The WITNESS.—I was talking about this Pleasant View ground; I was talking about the tunnel and the Hornet shaft. I knew that I had been down it when I testified in 1901. I knew I was down in it, in the Hornet shaft, or what they afterwards called the Hornet shaft. I don't know why I said I was not down it when that question was put to me. I know I was down in the shaft, where the Hornet shaft is now, and I have been down in it many times since. My recollection was better at that time than it is to-day. If as a matter of fact I testified then that I was not down in the shaft, I may be more likely correct than I am to-day when I tell you I was down in it.

Q. I will call your attention again to another portion of your testimony given at that time, and ask you if you did not testify this way:

"The WITNESS.—I started after these defendants had been enjoined in this case. Q. And you have handled some of the shafts that they have sunk? A. No, sir, just the tunnel; have not been in those shafts at all."

The WITNESS.—I testified that I was in the tunnel in the Hornet shaft and took samples in the tunnel. I have read the testimony, and I find I testified I was in the tunnel and examined the tunnel.

The first information that I had of the existence

(Testimony of Pat Mullins.)

of a lead upon this ground was in 1901 or 1902, when it was disclosed in the tunnel by somebody else. I did not know anything about the ground being located as the Hornet claim until I examined the tunnel. I [356] then obtained information that the ground was located as the Hornet quartz claim.

Q. And as against the contention by the locators of the ground, you then insisted,—you, of course, asserting title to the ground by reason of the interest that you obtained from Kemper,—that there was no lead discovered at the time that the ground was located as placer ground? A. I did.

The WITNESS.—I testified at that hearing that there was no discovery of quartz at the time of the application for the placer patent. There might have been quartz in the ground. It was scattered over the ground, but not in place, that I had seen. In other words, we had not discovered a vein.

Q. I will ask you if this was not your testimony at that hearing and the whole of it. I will read it. There are only six pages. Probably a portion of it will be a repetition of what I have said:

“The WITNESS.—My business is mining and in the business of merchandising. I have been mining 28 years, and for 20 years in Butte, Montana. I am acquainted with the ground described in the complaint, and a portion of the Butte and Boston placer, since 1895. I have made an examination of the workings of these defendants on that ground, and found a lead containing ore. I took samples of it. I took

(Testimony of Pat Mullins.)

those samples in four different places for a distance of about 100 feet across the lead. We found from four to nine per cent copper; that was an average sample at each place of about two feet. That is the value of the minerals contained in the ore.

Cross-examination by Mr. MACKEL.

The WITNESS.—I have been interested in that ground since about March 1895, maybe a little prior to that time. I don't know that I ever entered these shafts which are now sunk upon this location, not to go down them. I say I made some examination of the ore. I got these ores in the tunnel. I understand Mr. Mason and Mr. Merriman ran the tunnel. I went in that tunnel probably as far back as a month ago, and as late as yesterday. I was in yesterday. [357] Mr. Kemper and myself, and the ones we have got working there sinking a winze are working there now, taking out ore. I got my title from Mr. Kemper under his placer location.

Redirect Examination by Mr. McBRIDE.

I am acquainted with Mr. Mason and I know Mr. Merriman, seeing him over there in the last month or so, seeing them working there. I know of these defendants having done work on this tunnel, taking out ore; they have been working there for the last, probably ninety days until the last two weeks, two weeks ago the date of this injunction, when it was served. They were working at that time. I had a talk with them about the ore; they said they calculated to continue to take out ore, or at least Mr Mason did. I had my talk with him on the ground. I had probably

(Testimony of Pat Mullins.)

three or four different conversations on the ground and in town here. I did not find out how much ore had been taken out, any more than from the last statement from the M. O. P. Company's office, the amount that was shipped on the last shipment; I understand that there were four or five shipments made. Mr. Mason did not tell me how much he had shipped. My information as to the value came from my examination of the tunnel and also an examination of the returns of the M. O. P. Co., the returns from the last shipment. On account of not knowing the amount of tons of ore shipped prior to the last shipment I can't state the value of the amount of ore taken out. These defendants did not have my consent to mine this ore; they are on the ground without my consent.

Recross-examination by Mr. MACKEL.

I don't know whether they have got the consent of any of the other plaintiffs, but I think not; I first discovered that these defendants were trespassing on the ground probably about two months ago. We started to sink the winze last Monday morning. We started after the defendants had been enjoined in this case. Q. And you have handled some of the shafts that they have sunk? A. No, sir, just the tunnel; have been in no shafts at all. Q. You handled the tunnel, or openings made by these defendants? A. Yes, sir.

Redirect Examination by Mr. McBRIDE.

This work I have done is in the tunnel I should judge about [358] 150 feet; and west of the face about fifty feet. I am sinking a winze now; that is

(Testimony of Pat Mullins.)

the new work entirely we have started; new work started from the bottom of their tunnel We have not interfered at all with the ore body exposed in that tunnel.”

Mr. NOLAN.—And I will read likewise your testimony on page 453 of this record:

“Direct Examination by Mr. McBRIDE.

The WITNESS.—I am one of the parties to this suit. My business is mining and merchandising; I have been mining over 28 years. I started out on Lake Superior as a miner, or as a laborer underground, and from that to a miner, coming to Montana in 1878. Worked in the Hecla mine over here about 60 miles; from that to a foreman, or in charge of the mine. I operated the Comanche, the Gambetta, the Nipper, the Wild Bill, the Norah, the Destroying Angel, the Carrie, the Plymouth, the Rockbreaker, in Butte, and a mine in Utah called the Carbon. Principally copper mines. I am acquainted with the country included within the Butte and Boston placer and vicinity. I first became acquainted in 1895, along in February I think. I think I first acquired my interest in the Butte & Boston placer in the fore part of March, 1895, might have been some time in February. At that time I had been engaged in Butte for a number of years in quartz mining. I knew a lead when I saw it, and also to know when there was no lead. I took an active part in trying to bring about the compromise in the case of Passmore et al against Kemper et al. I made a thorough examination of all the openings in regards to finding a lead

(Testimony of Pat Mullins.)

before the compromise was effected, and I failed to find any lead in any of the openings that was on the ground. I found a small bunch of quartz in the discovery shaft of the Pleasant View lode claim that was not in place; it was float that had moved from some other place; it was sand, gravel below and around it. I had  $\frac{5}{8}$ ths interest in two locations; five-eighths of 27 or 28 acres of ground; that was my interest in the quartz. In the compromise that was effected I obtained about nine acres, or some fraction over; between nine and ten acres; five-eighths of nine or ten acres.

Cross-examination by Mr. CONNOLLY.

I compromised this by swapping my interest in the quartz for [359] the placer patent; that was the basis of the compromise so far as I was concerned, and also my copartners equally. We were to have a deed from the patent. I said I made an examination of the openings for the purpose of finding a lead, or in regard to finding a lead for the compromise, along the fore part of March, 1895, prior to the compromise. As I said, in the latter part of February, and in March prior to the compromise, was the period of my examination. I kind of think we had some work done there during that time. I would not be positive, but I think there was work done there. After the compromise was entered into and immediately after I did not have a location made out there within the limits of the Butte and Boston placer called the Linear location, I heard of it. I did not pay a share of the representation work in 1895, or any other claim

(Testimony of Pat Mullins.)

within the limits of the Butte and Boston placer. I did not receive any interest from any location made immediately after the compromise. The Pleasant View Discovery was, I would judge, about six hundred feet from the Hornet Discovery west, down the hill. I was not a party to the action referred to by Mr. McBride; the action was commenced before my time of being in. I said I found no quartz in any of these openings, no vein in place. I know where the Hornet is and where the Gulf is. One of those openings was there in 1895; the Hornet. I don't know whether it was there in 1891. I did not make a proposition to Mr. Merriman and Mr. Mason, parties defendant in this case, to pay them a certain amount for an interest in this present Gulf and their quartz locations; I did not make them a proposition to pay them ten cents. I was out on the Gulf location in and about this tunnel when they were working there, probably three or four times. I did not have a conversation, just immediately prior to the bringing of this suit number 9000, which we are now trying, when I was out on the Gulf location, in or about the tunnel, with Louis Mason, one of the defendants, in which I made him the proposition that if he and Mr. Merriman would give me an interest in those quartz locations in dispute I would remain out of this fight in the placer patent. I will make an explanation if the Court [360] will permit. I was out on Sunday; in the first place, Mr. Kemper and I went out there probably a week ahead of this time that Mr. Mason and I had this conversation; but I says to Mr.

(Testimony of Pat Mullins.)

Mason after looking through, 'I believe you deserve to make some money here.' My meaning for that was that it might have passed our lifetime before we would ever think of sinking a shaft or cross-cut, or do any more work to discover a quartz vein. That is as far as that conversation. Mr. Kemper will verify that, I guess. Then in about a week afterwards I went out and I saw Mr. Mason, called him to one side had a conversation with him. I told him that time if it was his intention to break this patent that I was afraid that he would be a long time before he would make any money out of it; on the other hand if he went and bonded up the interest of the placer owners he might make some money. That was the conversation. Mr. Mason agreed to come in and see me the following Monday to my store, which he done. He came in the store and he says: 'I am on time, as I agreed.' I says, 'All right.' 'Now,' he says, 'Mr. Mullins, if you get three-eighths in all of this ground back again ain't it better for you than five-eighths in this particular piece?' I says, 'Yes, but how are you going to give me my interest; how are you going to break that patent?' He says, 'Mr. Heinze and Mr. MacGinniss owns five-eighths; they will fight the suit; we will sell to you for \$10,000.' I says: 'Mr. Mason, if that is the proposition, I would not give you ten cents for your interest.' Now, there is the conversation and I will add to that that I advised Mr. Mason to go and sell it as quick as he possibly could. He told me he could get \$20,000 for it a day or two before, on the Sunday before he told me.

(Testimony of Pat Mullins.)

I says 'You sell for anything you can possibly get for it, because when they investigate the title they wont give you ten cents for it.' All this conversation I am talking about now occurred in my store between me and Mr. Mason; that is my explanation. Q. Now, if you had a conversation as you say, in the store down to the point where you say the conversation was dropped, I will ask you if at that time the telephone did not ring and that you said it was a telephone for you to come and sign up an agreement, or words to that effect, for a restraining order in this case up on Hamilton Street, and that you said to Mr. Mason, 'Now, if you are [361] going to make me any proposition, do it so I won't have to show my hand.' A. The proposition was the proposition that I spoke of. The Witness: I did not say anything of that kind; and I did not say that again in front of the store standing on the curb. I operated those mines I have told you of a year and perhaps two years at a time; I certainly switched from one to the other, operating a great many; never remained in one a great length of time. I operated the Nora; I had a lease and bond on it. I surrendered the lease because it was not paying me to work it. I believe after I surrendered it Mr. Kellogg took out some ore. I also had a lease and bond on the Comanche. I think I sold it for fifteen thousand,—I ought to have had several millions though, but I didn't get it; and I think I have got friends around very close to that probably lost money in mining; at least, I failed to see every one successful."

(Testimony of Pat Mullins.)

Mr. NOLAN.—Now, that is all the evidence, isn't it, that you gave at that hearing. Do you have any recollection about the matter at all?

A. I guess that is the evidence I gave at that hearing.

The WITNESS.—Those three shafts which I spoke about yesterday the three which I examined, were not in line with each other; they were a considerable distance off line. In the light of my testimony which you just read I am not able to tell you how many holes I examined besides those three. I think I made more than one examination of those holes before the compromise was effected in 1895. I went over the ground at different times; may not have went into the different holes at different times or all of them. I made the first examination there some time in March, February or March. This was a pretty thorough examination. At that time I was about to invest my money in the purchase of ground supposed to contain quartz. The reason I made other examinations was to satisfy myself if there was a vein there or not. I probably went over the same ground the second time. I don't know that I went into the same holes; I might have went into some and might not. The surface of the ground was covered deeply with wash; I knew that when I made my first examination. There would not be anything new disclosed by a second examination so far as bedrock conditions were concerned, but I had [362] to satisfy myself in my own mind whether we had discovered a vein or not, or what ground we would have to come in to

(Testimony of Pat Mullins.)

offset the application for the placer patent. I do not know that I made a third examination; I may have, but I do not know. I remember being in Forestell's office the day before yesterday in this city. I did not state to him at that time that I advised Kemper to locate for quartz after the compromise was effected. I made a statement that I advised after we had compromised, or said to Mr. Kemper, I thought it might save any dispute afterwards to patent for quartz. Mr. Kemper said, "You haven't got a quartz vein"; I says, "I know we haven't, but it might be better to patent it and instead of patenting it for placer." I did not suggest to him that he should make the necessary affidavits.

Q. How did you expect that he would take proceedings to get title to the ground for quartz purposes without any quartz vein there?

A. I expected for him to do development work and first prove if there were a quartz vein there. That was my intention and I did at the time.

The WITNESS.—I don't know that I was pretty confident that if there was work done we would develop quartz, but that was my idea. I proposed that all of us would go in and stand the expense of the development. I did not have in mind any particular place excepting the eastern portion of that ground, as in my estimation bedrock would be found nearer to the surface. The surface of the ground and the indications in that country shows it is closer to bedrock. I had not known this ground very long before I made this purchase. At the time I was operat-

(Testimony of Pat Mullins.)

ing some ground about a mile to the east. At the time I got the transfer from Passmore, I do not know if I knew how much of an interest I got. I have no recollection as to the amount I paid; it might be a thousand dollars, might be more, maybe less. I likewise acquired an interest in the property at the same time from Hamilton. I might have paid five hundred dollars for that interest or it might be more. When I purchased those interests I purchased interests in two quartz locations there, the [363] Pleasant View and the Point Pleasant. I made an examination of all the ground that was there included within the boundaries of them two claims. I do not know how many openings I examined on the Point Pleasant. I think I examined some. If there were openings on it, I examined them. The consideration might have been correctly named in the deed I got from Hamilton, or it might not. If the consideration named was five hundred dollars that might be correct, and if the consideration named in the other deed was one dollar it might not be correct, it would be more than that. On the same day I obtained the deeds from Hamilton and Passmore, I think I obtained the deed from Mrs. Hopkins, through Hamilton. I do not know what the consideration was for that. Maybe five hundred dollars, maybe eight hundred dollars; I ain't positive. I don't know whether these openings were in the same condition in 1895 as they were in 1891. They would naturally be sloughing off from time to time. They were not timbered. I think the bottom of the shafts were cleaned out

(Testimony of Pat Mullins.)

when I examined them in 1895. I did not see it done, but there had been men working there cleaning out and getting ready for trial. I don't know who the men were. It may be true that the only cleaning out was in the old Pleasant View Discovery shaft, so called, and in a hole about a hundred and fifty feet deep that was there. I think the Hornet Discovery shaft had been cleaned out. I think I knew a man in 1895 or 1896 named Tim Sullivan. I do not think he did any work on this ground; still he might have. He did not do any work for me in representing the Lynne lode claim covering this ground. I might have told Mr. Mason, soon after the compromise was effected, that this ground cost me four thousand dollars. If I did tell him that I don't know that it would be true.

I call a vein that is confined between two walls, bearing either gold, silver or copper, or at least one well-defined wall. Between the walls you would find vein filling. This vein filling would be considered a part or portion of the vein. There was no veins or vein filling in the shafts I examined there. I did not see anything in the Hornet shaft that resembled ore to me. I did not see any material in the Hornet shaft resembling Defendants' Exhibit 27. I would call that ore. If that was in place there, I would not have [364] any hesitancy in declaring that it was lead matter. I did not see any material like Defendants' Exhibit 36 in place in the Hornet shaft I might have seen it there; you will find bunches of that material anywhere in the ground in the loose wash. I

(Testimony of Pat Mullins.)

did not see any material like that in the Hornet shaft that I know of. When I say I did not see it there in place I mean it was not in sight. I did not see any material like Defendants' Exhibit 37 in that shaft. If I saw material of that kind I would pronounce it vein matter or vein material, or vein filling. I might have seen some material in the holes I examined out there like Defendants' Exhibit 30. I would call that vein material if it was in place. If I saw that in place there I would, as a miner, pronounce it vein material. I might have seen material like Defendants' Exhibit 31 in some of the holes I examined there, but not in place. It is vein material. When I say in place it must be solidly deposited in the bedrock with at least one wall. I can tell the wall if it is solidly deposited in the bedrock, because the wall is different material from the vein filling. I would call that quartz and porphyry mixed. If I encountered granite or aplite adjacent to it, I would call the granite or aplite the country rock or wall. I may have seen material like Defendants' Exhibit 21 in the holes I examined out there. If I saw it in place then I would consider it vein matter. I told you I had had a good many years' experience in working mining properties and handling quartz claims. If I saw any of the material that you have called my attention to any place on that ground there, I would not have any hesitancy in locating the ground as a quartz claim if it was in place. I might have seen material like Defendants' Exhibit 22 in some of the holes I examined there, but not in place. If

(Testimony of Pat Mullins.)

I saw it in place, I would certainly locate it for quartz. Defendants' Exhibit 28 is vein filling; if I saw it in place I would not have any hesitancy in locating the ground. I would call Defendants' Exhibit 26 ore, some of it. If I saw that in place I would not have any hesitancy in designating it a vein. In conducting work on a mining claim, and I should find outside of the walls mineralized material so as to constitute commercial ore, if it was in place I would call it a vein. I have known where the walls of a vein had [365] become enriched from the vein, but not a very great distance, maybe a foot and maybe two feet. It might be a slip from the vein; it may be a portion of the vein that is divided. In a case of that kind I should say that the wall is extended back to that point where the mineralization ceases, if it was a portion of that vein. If it were any distance and country rock or granite between, and another vein was struck, either a spur from the main vein or a separate vein, that would be different. Possibly if two veins paralleled each other within ten feet, the vein filling might become enriched from those two veins, or either one of them.

If I found material like Defendants' Exhibit 24 in place, I would call it vein matter. If I found it in place in any quantity I would not have any hesitancy in locating it, if I found it in bedrock. I might have seen material like Defendants' Exhibit 33 in the holes I examined there in 1895, but not in place. If I saw it in the bedrock in place I would say it was vein material.

(Testimony of Pat Mullins.)

This lead on which I afterwards sunk on this ground was uncovered in 1901 or '2. I did not know in the intervening time that Mr. Mason was doing work on the ground until he commenced to take ore out. After this lead was uncovered this lawsuit was instituted at which I gave my testimony that you read to enjoin the working of the ground. After we secured an injunction, Mr. Kemper and I carried on mining operations there, and as a result sunk this incline shaft. That shaft was sunk following the pitch of the vein. In this lawsuit the defendants were contending that they struck a lead in this Hornet Discovery, and we were contending that they did not. I believe at that time there was an opening on the ground in the way of a shaft known as the Gulf Discovery. To my judgment this Gulf Discovery was not embraced within the walls of that vein. In sinking this shaft we were in the ore and vein material all the time. I believe a portion of this vein matter would assay from four to nine per cent—anywhere from a foot to eighteen inches of it, or maybe in places two feet. The balance of the material was low grade. The balance went over the dump. During all of the time we were sinking this shaft the lawsuit was still pending; and during all of the time [366] we were running the drifts and underground workings the lawsuit was still pending. I have not been on the ground on this visit to Butte. In sinking the shaft we encountered sulphide ores. Sulphide ores was right from the start in sinking the shaft from the tunnel down. The dip of the vein

(Testimony of Pat Mullins.)

would vary a little. The walls also varied. Probably three feet was the nearest distance together, and probably six feet the greatest distance apart. When those walls would approach each other to a distance of three feet, it would be maintained for a distance of maybe twenty to thirty feet on the strike, and then would widen out again. In the first level that we run to the west, I would not be positive whether it was seventy-five or a little more, or a little less, we encountered a fault running north and south, cutting off the vein. Running west I was on the vein. We encountered the fault. It cut the vein off at that point I think after it drained off from the mud, we might have done some work and found vein material beyond that to the west. With reference to the vein as it went to the east, I could not say whether it varied much or not. I think this fault appeared at a lower depth just the same, and produced about the same result. There was no work prosecuted westerly beyond the fault that I know of. I don't know what became of the vein as it was affected by that fault at a lower depth. When we quit I think the depth of the shaft was a hundred and fifty feet, and maybe more. This vein was in existence at that depth. As far as ore was concerned it was not as good. It was broken up more. The walls were still there; it maintained its width about the same as at the higher level. It was sulphide ore mixed through it, through the vein material. The vein material was quartz and granite mixed. Aplite is a new one to me. As we got depth in the sinking of the shaft

(Testimony of Pat Mullins.)

we run cross-cuts to the north and south, but principally to the north. The vein in going to the east became very much broken up, and then we run a cross-cut bearing to the northeast a good deal. In running these cross-cuts we run into the country rock, and some little streaks once in awhile of apparently vein material. Some of the streaks had a parallel strike with the vein. Some of them were running diagonally across. The streaks were simply crevices in the country rock. There might have [367] been some mineralization through the country rock, but not as a vein, or anything you would save for mineral.

I said to the best of my recollection before this compromise of 1895 there was a conference of the quartz claimants. I do not think Mr. Kemper was there. I am not certain Mr. Mason was there, but I think he was. Passmore and Mr. Mason and, I think, Hamilton made an examination of this ground besides me. At that conference the question up for discussion was whether there was a lead in the Pleasant View Discovery and in the Point Pleasant Discovery. That was the question that engaged our attention, in those two holes. We felt it was incumbent upon us to establish that there was a discovery in those two holes, otherwise we would lose out.

Redirect Examination.

(By Mr. SHELTON.)

I remember that I examined the ground before the hearing for an injunction in February, 1901, for the

(Testimony of Pat Mullins.)

purpose of determining whether there was a trespass on the ground. I think I found Mr. Mason and others on the ground. That is the same Louis Mason that had been a party to the settlement that I have already testified about with Kemper. I understand that he received an interest in the Butte and Boston placer as a result of the settlement, the same as the balance of us. When I found him on the ground at the time I made the examination previous to giving my testimony in February, 1901, he had done some work there; he had run a tunnel and a cross-cut from a shaft, a small cross-cut. That is the same tunnel as was testified about being on the vein. That tunnel followed the vein. The ore had been taken from the vein; that is down to the depth of the level of the bottom of the tunnel. Mr. Mason did not do this work under the settlement that he had made with Mr. Kemper; I understand he made a quartz claim. He was locating the ground; I do not know what Mr. Mason's intention was. I was a party to the suit. I know that he located the ground, or was one of the locators. It was the same ground that had been patented as placer claim.

At the time I testified first in this matter, according to the record which was read here, I stated I took samples for a hundred feet across the vein. I took the samples for a distance of a hundred feet, and probably four different places across the vein, but on the [368] run of the vein, because there were no openings across the vein greater than probably six or seven feet, of vein material, so it would be impos-

(Testimony of Pat Mullins.)

sible for me to take a sample across a hundred feet of the vein, when there were no openings there. At the time the vein was not exposed there outside of the tunnel that I seen.

Referring to Complainant's Exhibit 15, the cross-cut from the Hornet shaft represented on the map might have been made larger after my examination in 1901. There was probably a hole broke through to the tunnel, and it may have been made larger after that time. I do not recall of them being connected at the time of the injunction.

Q. Now, after your first visit, you again testified as to whether there was a vein there—a vein any place on the ground—a vein known at the time of the placer application was made on May 11th, 1901?

A. I think I testified there were no vein known at that time.

Q. But your testimony about that was given after your first testimony, which was about the trespass?

A. That was after the tunnel was run—you mean after the vein was exposed?

Q. Well, it was given on the third of April, 1901, while your first testimony was given on the 9th of February, 1901.

A. Why, there were a vein there then, yes.

The WITNESS.—I think I made an examination of the ground before I testified the second time; I am pretty sure I went to the Hornet shaft that time.

I mean by permanent bedrock where you have gone through all of the surface into the rock or granite into the solid formation. When I examined the

(Testimony of Pat Mullins.)

Hornet shaft in 1901 it was about the same depth as the cross-cut to the tunnel. It was deeper then than when I examined it in 1895. I know the boundaries of the Butte and Boston Placer, about where they are. I saw all of the definite openings there. If I found Defendants' Exhibit 36 in place, I would call it a vein. I mean where it is a vein and at least one wall in granite or country rock. I don't care whether it is granite or what it is, so long as it is a vein. I mean that if I sunk on it and found a bunch in the [369] granite and by development work it did not remain, and in developing you did not find a vein, I would not call it a vein. Unless I found it in place in a vein I could not call it a vein. I could not take these samples and without any examination of the ground tell whether they came from a vein or not. Referring to Defendants' Exhibit 66, and particularly to the red material in the central part of one side of that exhibit, I call that red oxide, sulphide. The material in the vein that I call sulphide was of that kind of material.

Recross-examination.

(By Mr. NOLAN.)

I call that oxide ore; there may be some sulphide in it, the dark. At a depth of a hundred or hundred and fifty feet, I think it was turned more to a sulphide.

I did not see any material like Sample 56 in those holes in place upon my examination in 1895. I might have found it in some of the holes. I would not say whether I did or not. If I find material of that char-

(Testimony of Pat Mullins.)

acter in place, I would call it vein matter; as a miner I would call it vein material, carrying some values, quartz and copper. I probably saw material like Exhibit 57 in some of the holes I examined in 1895; I don't know whether I did or not. If I saw material of that kind in place, and could expose it for ten or twelve feet on the run and knew it was permanent and in place, I would call it a vein. If I found it continuing for six feet in place I would make a discovery and call it a vein. I would call Defendants' Exhibit 60 vein material.

Redirect Examination.

(By Mr. SHELTON.)

Q. Mr. Mullins, if this sample, Defendants' Exhibit 56, was found bounded by granite, and being apparently frozen in the granite as a part of it, no wall except the dividing wall between this rock and the gray granite, and no mineralization except such as appears in that stain, and it being irregular in shape, not within a fissure, but being a regular strike, of course, but being an irregular shaped body, would you call that a vein?

A. If it so developed any distance, I would call it a vein. [370] If it did not prove to be a bunch of rock caused by being carried from some other point by the elements or something. If I seen where it would develop that it was permanent in place, at least one wall, I would say it was a vein.

The WITNESS.—I don't know about a fissure, or what you call a fissure. If I developed a vein and it was not a bunch, was not carried by the elements

(Testimony of Pat Mullins.)

from a slide of a higher hill, and it was permanent in place, and I run on it four or five or six feet, and I found it was permanent in going both ways, I would call it a vein.

Q. Suppose it makes up a part of the granite, or if the rock of the country was without any mineralization excepting the showing of iron or such mineral as is shown in it, and it is frozen to the granite as though it had been pushed into it, and less than one per cent of any material in it, any more than is found—not more than is found in the country rock on either side of it, you would still call that a vein?

A. I would still call that a vein, if it was developed to any extent, and still showed a continuance of the same vein material, and between at least one wall, and different to any one of the walls, carrying quartz mineral. If it was simply a bunch there in the granite, and would run out of the bunch in a foot one way or the other, I would not call it a vein.

Recross-examination.

(By Mr. NOLAN.)

The WITNESS.—That is to say, if this material which seems to be material which might be found in a vein, if I found it there in a rock in a little kidney, and that was all there was to it, I would not call it a vein, but if it was there and had a regular strike and regular dip, and it differed from the rock bounding it on either side, and it was there permanent, then I would call it a vein. It is sometimes the case that lead matter may in one place have very little value, and then as you go deeper it may increase in value.

(Testimony of Pat Mullins.)

Redirect Examination.

(By Mr. SHELTON.)

The WITNESS.—Referring to these samples here, I could tell they are vein material without knowing where they came from, but I [371] could not say whether it came out of a vein. I do not pretend to say that any of them came out of a vein, because I have not seen them taken. These samples that have been shown here are vein material. They are vein material, but may not have come from a vein. I do not say they have not come from a vein either. I have not seen them taken.

Recross-examination.

(By Mr. NOLAN.)

The WITNESS.—I would say that it is material that you would find in a vein, or would be likely to find in a vein, and if I found that material, not in a little bunch, but regularly in the solid rock, having a strike and having a dip, I would have no hesitancy in calling it a vein.

Redirect Examination.

(By Mr. SHELTON.)

The WITNESS.—I could tell much better by seeing it in place. I think I can tell a vein when I see it.

(Subscribed by the witness and sworn to before the master January 15, 1912.)

**[Testimony of John Stafford, for Defendants.]**

JOHN STAFFORD, a witness duly called and sworn on behalf of the defendants, testified as follows:

Direct Examination.

(By Mr. NOLAN.)

The WITNESS.—My name is John Stafford; I live 524 Caledonia St., Butte. My business is mining; at the present time I am pump-man at the Original. I have followed mining about forty years. About twenty-four years in Butte, except about six years outside. I had charge of the Mayflower for about five years, that is a gold and silver mine. I was also night foreman up there at the Ticon; foreman down at the Ella; and shift boss at the Gopher. Besides acting as shift boss I have worked as an ordinary miner. The Ticon was a copper property; the Ella was gold and silver; the Gopher was copper. I have done prospecting and leasing, too.

I know the property in controversy here, the Butte and Boston [372] Placer. I believe I first became acquainted with it in 1903. I did not do any work upon it. I made an examination of the openings upon it in 1903; and I have recently made an examination of the property. In 1903 I went out there and went down what they called the Mullins incline, Mullins shaft, I think, about thirty feet below the surface of the tunnel; and also I went into the face of the drift, and was down what they called the Rabbit Discovery, and into the cross-cut coming

(Testimony of John Stafford.)

north to the tunnel. At that time, there was just a small hole through, if I remember right. At that time I took samples for the purpose of determining whether the rock had any values. I took samples down the incline shaft, the Mullins shaft, in the so-called hanging-wall. I say so-called hanging-wall, because it is not the hanging-wall; that is one sure thing, because it bears too much mineral to be a hanging-wall there. I got an assay of the samples I obtained from the hanging-wall then. I took three samples, about twenty feet apart on the strike of the vein. There were drifts from the incline shaft, running east and west. No. 1 sample was taken west of inclined shaft seventeen feet; No. 2 eighteen and one-half feet east of incline; No. 1 east, seven feet east of center of incline. That No. 1 is on the east side, the others are on the west; No. 1 west, and No. 1 east. After obtaining the samples I took them to the assay office and had them assayed; George H. See was the assayer of this city. This is the return. (Paper handed to the Examiner and marked for identification Defendants' Exhibit No. 70.) This Defendants' Exhibit 70 is the return that I received from the assayer. No. 1 west of incline, seventeen feet west of center of shaft, trace in silver and two and four hundredths per cent copper. No. 2, eighteen and a half feet east of incline, one and one-fourth ounces of silver, and five and ninety-four hundredths per cent copper; No. 1 east, seven feet east of center of incline, trace of silver and twenty-one and six one-hundredths per cent copper.

(Testimony of John Stafford.)

Aside from the assays, the ground from which I obtained the samples, appeared to me as a miner to be good ore. I did not make any exploration greater than the distance of the samples.

At that time in 1903, the Rabbit Discovery was filled up about to [373] the bottom of the tunnel, and on the north side of the shaft there was very good indications, in fact, some very rich copper ore down about level with the tunnel, where it was started. I am mistaken about that; I went down the Hornet Discovery at that time.

I did not go into the Rabbit Discovery in 1903; I went into the Hornet Discovery. The shaft was filled up to about the bottom of the cross-cut running north. I saw evidence enough of a lead there. I saw some very good ore there, on the north side of the shaft. I did not go through this cross-cut and into the tunnel at the time.

I have been on the ground a number of times lately, to examine the property. In the examination I made recently I went into this deep shaft 21 on the northerly lead. I found very good lead material, ledge matter, vein matter in there, in the bottom of the shaft, and also up about five feet. There is a seam running across east and west, that I would call really the strike of the vein. Of course, you could not hardly tell the course of the vein, but the stratifications in the ground seemed to be all running east and west.

Leaving that shaft and proceeding easterly along that portion of the ground, there is a tunnel. I don't

(Testimony of John Stafford.)

know just exactly what distance it is. We could not get down the mouth of the tunnel. We jumped down a hole and then went down and in the cross-cut north, and in a cross-cut south, and on the south side there is very good indications of lead matter. I mean decomposed lead matter, stratified with quartz and iron, such as you find in the body of a vein. On the north side it differs from the material adjacent to it, but on the south side—of course, I don't know really what aplite is, but what they call aplite, a big blocky aplite, and it is divided distinctly, and striking east and west and laying to the south. I will say that the lead there and the lead in the deep shaft are one and the same.

I went down in shaft No. 1; it is about four by four and about sixteen feet deep. I could not exactly say how much is in bedrock. I found very good evidence of mineralization there. There is a streak of quartz running east and west about ten inches wide, I would say, [374] or quartz porphyry, a little to the south. Then there is another streak more to the north, running east and west, on both ends of the shaft—one on the east and one on the west seams have been cut in two. As a mining man, with my experience, I would say that was vein matter. There is enough disclosed there so that I could determine the strike and dip of that lead. The strike is east and west, and the dip is a little to the north. Either one of them quartz leads would make a wall, in any one side or the other, by taking your granite off the quartz. Of course, then you would leave a wall. In

(Testimony of John Stafford.)

the light of my experience as a miner, and under the conditions existing there, I would say there is a true wall disclosed there. The two streaks constitute one and the same vein.

I next went to shaft No. 2, I believe; it is east of shaft No. 1. I found about the same evidence of mineralization there as in shaft No. 1; the same lead material. The strike of the lead disclosed in shaft No. 2 was east and west; the dip was a little to the north.

I believe the next was the Rabbit Discovery, the Rabbit tunnel, I should have said. That is tunnel 31 as shown on this map. There are three cross-cuts in it. I found a lead in the tunnel itself. I first encountered the ore in the north cross-cut. I found one streak there a foot wide of very good copper ore; it would pay to ship, I am satisfied of that. Aside from the ore, it was all vein there in the cross-cut, almost. Taking it back from this streak of ore south it was pretty well mineralized for about four or five feet, and then from there in north it was all mineralized, which would make a distance, probably, of twelve feet of well mineralized ore, or vein filling. When I got to the end of the twelve feet, the cut was still in vein filling. I was out there, and the next time I was out there again, the cross-cut had been extended about six feet; for this distance of six feet, the character of the rock was almost all ore all the way, but one streak especially, about two feet wide, was very good. At the end of the cross-cut as I last saw it the material was granite. Take it all there, I think

(Testimony of John Stafford.)

the width of the lead was sixteen or seventeen feet. Its strike was east and west.

[375] Aside from this cross-cut, this lead disclosed itself, I believe about thirty feet in the drift from the cross-cut. The material in which the tunnel is run would all be termed lead matter in the mines on the Butte hill, as far as I could see from the south side of the tunnel until the north cross-cut.

There is a cross-cut running to the south. The material in the south cross is different from the material in the north cross-cut it is not so highly mineralized. In the tunnel east of the cross-cut, the lead showed some very good copper ore, and east of that and up to the face of the tunnel it led right through the same very good ore, all the way into the face, and then in the face there is a seam running about east and west, and dipping to the north, which I would almost term to be the hanging-wall of that vein. I do not think I was able to locate the footwall, unless there was a little more development work; I don't think you could term it a footwall.

The next place, I visited was the Rabbit Discovery; the Rabbit tunnel is east of the face of this tunnel. In the Rabbit Discovery I found especially one streak of good copper ore. I found that in what you would call a little drift running to the west there. It is just a little bit started, might have been picked down there, running to the west. I would call it almost all lead matter in the shaft.

After that, I think I went to the Hornet. I did not make an examination of the Vesuvius workings

(Testimony of John Stafford.)

off of the ground to the west. In my judgment, from the examination I made of these different openings, I would say it is the same lead disclosed in the various workings.

Passing to the southerly lead, the Hornet, I examined the tunnel, the Mullins tunnel, all the way in. I also examined there what they call the Hornet Discovery and the cross-cuts running to the Mullins tunnel. I noticed the Mullins inclined shaft. The north and south boundaries of that shaft do not constitute the walls of the lead. It may be the footwall of the lead, but not the hanging-wall, disclosed in the Mullins shaft. There [376] is very little evidence of mineralization in the foot-wall, but in the hanging-wall, for a distance of about thirty feet, it is very highly mineralized; that is thirty feet south from the hanging-wall. That mineralization is evidenced in the cross-cut running from the drift to the discovery, Hornet Discovery. That cross-cut is in ore material, and it is richly mineralized, very much so; there is commercial ore all through that cross-cut.

There is a cross-cut in the bottom of the Hornet shaft, and it is in good vein material, with streaks of ore, and very good ore running through it. Those two cross-cuts,—upper one running from the tunnel to the Hornet shaft, and the bottom one running northeast from the bottom of the shaft are in vein matter. The course of the lead there is east and west.

In the Hornet Discovery shaft itself, it was very

(Testimony of John Stafford.)

highly mineralized from the bottom of the tunnel, or about the bottom of the tunnel to the very bottom of the shaft. There is a lead disclosed in the Hornet shaft, from a little above the tunnel or the cross-cut clear to the bottom of the shaft. I obtained samples for the purpose of having them assayed. No. 1, ten feet north of the Hornet shaft, in the north cross-cut; No. 2, fifteen feet north of the Hornet shaft in the north cross-cut; No. 3, mouth of the first cross-cut, eighteen feet from discovery surface; No. 4, twenty-eight feet from surface of discovery; No. 5, twenty-four feet north of discovery shaft in cross-cut,—the first cross-cut north.

I said No. 3 was taken at the mouth of the first cross-cut, eighteen feet from the discovery surface; that is, on the north side of the shaft, and the mouth of the cross-cut. No. 4, I said was taken in the shaft, in the west end, twenty-eight feet from the surface.

I took these samples to the assayer, Mr. Hocking. At the time I turned these samples over to him they were numbered in this way. I told him to assay them for copper and silicate. Referring to Defendant's Exhibit 71, that is the return I got from the assayer for those samples. Sample No. 1, five one hundredths ounces in silver, five-sixths per cent copper, and ninety-six one hundredths and twenty-three and four one hundredths in silicate. Sample No 2, five one [377] hundredths ounces silver and forty-nine per cent copper and sixteen one hundredths, and thirty-three and five one hundredths in silicate.

(Testimony of John Stafford.)

No. 3, two one hundredths ounces in silver, fifteen per cent copper and ninety-two one hundredths, and sixty-three and one one hundredth in silicate. No. 4, trace in silver, five per cent copper and seventy-one hundredths, and seventy-nine and two one hundredths per cent silicate. No. 5, six one hundredths in silver, forty per cent and thirty-eight one hundredths copper, and thirty-eight per cent and four one hundredths in silica.

I next visited shaft No. 19, as designated on the map; about seventy-five or eighty feet deep. There was a very good lead disclosed there. It is decomposed granite, porphyry, mineralized, with iron and quartz, little quartz stringers running through it, and talc. I would call it a part of a vein, in the light of my experience as a miner. The talc seams would give you, I think, the strike of the vein. It would really constitute a wall. It would be running east and west and dipping to the south a little.

We find talc in almost all veins, sometimes on the footwall and sometimes on the hanging; in fact, sometimes you find it in the center of veins. It is a good indication of being a vein right in that neighborhood, and especially when you have good vein filling on one side of it. I say there was vein filling disclosed in this shaft, I could not tell with the naked eye whether it was mineralized, except with iron, it was mineralized with iron.

East of that shaft No. 19, there are tunnels 35, 36 and 37; I did not go into them.

Going back to the Hornet Discovery shaft, I

(Testimony of John Stafford.)

noticed and was in a drift or cross-cut running in a southwesterly direction from the bottom of the Hornet Discovery. I would call that all vein filling, vein matter, heavily mineralized.

Q. Going back to the shafts 1 and 2 and the northly lead, what would you say as to whether or not, the vein evidences there were of such a character in either one of those shafts as would justify you as a reasonable mining man in locating that ground as a quartz claim?

By Judge BOURQUIN.—Objected to as immaterial.

A. Yes, I think it would justify anyone.

Q. And what do you say as to whether or not the evidences were such in the Hornet Discovery shaft as to justify you as a reasonable mining man, in locating that lead?

By Judge BOURQUIN.—Like objection.

A. I would.

[378] Cross-examination.

(By Judge BOURQUIN.)

The WITNESS.—I am a pumpman in the Original. I am no relation to any of the parties to this action, and have no interest in the ground; simply examined it out there at their request for the purpose of testifying here. I was there first in 1903; I went out there to examine the property and take samples. Mr. Clark invited me out there; I think it was at the time the case was coming up. I think it was in 1903. I did not make any memorandum at the time; I thought this might be memorandum enough

(Testimony of John Stafford.)

(examining paper), June 2d, 1903, is the date I took those samples. Those came from the Mullins inclined shaft, about thirty feet below the level of the tunnel.

When I said the southwest drift from the Hornet shaft was mineralized, I mean the cross-cut from the bottom of the Hornet shaft running back under the tunnel is mineralized; I had no reference to a little drift. I did not examine that little southwest drift at the bottom of the Hornet Discovery; I don't think I noticed it. I did not inspect any of the tunnels between the Hornet tunnel and shaft 19. I was in shaft 19. I did not have a compass with me. I went down the shaft on the ladders. I took the course of the strike in the bottom of the shaft by the strike of the seams running in the vein. That talc seam crossed the shaft, from one side to the other, east to west. That talc seam was an inch or two inches wide. I say to the best of my judgment it was east and west, I had no compass. I don't know that is a fault. Outside of the talc seam, the material in the bottom of that shaft was decomposed porphyry granite; what we term vein filling or vein matter within the bounds of a vein. It is itself ore material, but it does not carry any values at that. I say that is what we find in the boundaries of a vein; I have never seen it outside of a vein. You could see little veinlets of iron running through it; they run in every direction. There was also little stringers of quartz; they seemed to be running east and west; they run the same as the

(Testimony of John Stafford.)

talc seam; there were considerable of them. They were from a knife blade to an inch thick. I know quartz porphyry when I see it. That is what I saw in [379] shaft 19; there is not much difference in it as I can see, quartz porphyry or quartz granite. I would not say it was quartz porphyry I saw in shaft 19. I do not know aplite. I told you of seeing a large block of what you term aplite. I have seen it before in the Butte district; it is not ore, nor country rock; you find it in the bounds of a vein, as well as outside; some of it is decomposed material, and some of it is solid and hard. I saw what they term blocky aplite. I saw no evidence of walls in shaft 19, unless, as I say this talc seam; of course that might be a wall. The other side might be country rock or granite. As far as I saw the shaft is all in vein material, soft, decomposed vein material. I possibly did not see a permanent wall there. A permanent wall is the wall next to the country rock. I went out there lately to prepare for this trial; to get information to lay the case fairly, as I saw it, before the court. That was true also when I was taking samples. In taking the samples, I was trying to get copper; I understood they said there was none there; they were not exactly picked samples; I was taking samples of the best streaks.

I said I got sample 1 ten feet north of the Hornet shaft, in the upper cross-cut, in the bottom of the cross-cut. I did not take it all the way across the bottom. The bottom was in the solid formation;

(Testimony of John Stafford.)

there was no debris there, it was cleaned off. I took the sample with a little sampling pick. In taking the sample I covered about six inches wide and about eighteen inches to two feet long. About eighteen inches or two feet the length of the tunnel and about six inches across the tunnel. The material was copper ore; some of it was red oxide, the other was green stained quartz. There is some there yet. I did not purport to be taking a fair average of the bottom of that cross-cut.

My next sample No. 2, was taken fifteen feet north of the Hornet shaft in the upper cross-cut. That was also taken in the bottom; I took it about the same way, and covered about the same scope of ground taking it. It was oxide, red oxide. It was not a fair average all across the bottom of the cross-cut.

[380] My third sample was at the mouth of the cross-cut, eighteen feet from the surface of the Hornet Discovery shaft, from the north side of the shaft. A little south of the entrance to that cross-cut. It might be possibly eight or nine inches above the bottom of the cross-cut. That cross-cut does not fill the shaft at the mouth not quite; I took it from the west side of the cross-cut on the north side of the shaft, a little bit above the floor of the cross-cut. I covered about a foot of the wall there in taking the sample, east and west, and possibly seven or eight inches up and down. I was taking the rich streaks as I saw them. That strike there must be pretty near a foot wide. The streak there was run-

(Testimony of John Stafford.)

ning east and west and dipping into the cross-cut; it disappeared about six or seven feet in the cross-cut under the floor of the cross-cut. I took that sample about eight or nine inches about the floor of the cross-cut. The bottom streak was pretty near bottom of the cross-cut.

My next sample, No. 4, was taken twenty-eight feet from the surface of the Hornet Discovery shaft on the west side. The streak was an inch to two inches wide; the dip was to the north, but you could hardly tell which way it was running; apparently it was going in toward the tunnel. Those were apparently streaks that were running across the vein. That streak appeared pretty nearly across the shaft; I think it disappeared in the south wall; it disappeared before it got to the south side. That streak was red oxide; good copper ore; it was what we call a leader in the vein.

The next sample, No. 5, I took from a point twenty-four feet north of the discovery shaft in the upper cross-cut. It was taken just about in the same line as the other two, in the bottom. That brought me about four or five feet from the tunnel. It was taken in this upper tunnel, about twenty-four feet from the shaft, and four or five feet from the tunnel. I took it after the same fashion as the others. I dug it out of the solid formation, out of the solid vein.

I did not notice a north and south fault in the upper cross-cut. If there had been one there I possibly would have observed it. There [381]

(Testimony of John Stafford.)

was none in the bottom of the cross-cut, that is a sure thing. I think I remember seeing what they call a fault, I think, in the side or roof of the cross-cut, but I did not find it in the bottom of the cross-cut. I picked almost the full length of the cross-cut, and I saw no fault there. It is not a fact that there is a fault there, and whatever ore I brought for the purpose of assaying I got out of it; that is not a fact. I did not observe it in the back of the cross-cut, towards the west. If there was a fault there running from the vein in the Hornet tunnel, you might not find it more heavily mineralized than the rest of the country around it. We find faults where we have no more mineral than in other places. It was all mineralized there, but not all this red oxide of copper. I said it existed there in streaks. I said this was a streak from the Hornet shaft close to the tunnel, and I also found another streak down in the Hornet shaft. In my judgment it was a rich streak in a vein. I have no idea how those rich streaks are formed, but I do know they exist throughout the mines of Butte. Through the Hornet shaft and upper cross-cut, I saw this one streak, that is a sure thing, a very nice one, and on the side of the cross-cut it is all very well mineralized, and also in the bottom here and there you will find little streaks running through it.

In the lower cross-cut from the Hornet Discovery to the raise under the Hornet tunnel, I would call the composition of the mass material exposed vein material. It was more of a granite than anything else;

(Testimony of John Stafford.)

and in some places heavily stained with copper, and in other places streaks of this red oxide of copper. It was not as heavily mineralized in that lower cross-cut as in the upper one; not quite; that is to say, not as heavily mineralized as the bottom of the upper cross-cut. The walls of the upper cross-cut were mineralized. That was not very far below the wash, and they were mineralized up as far as the wash, but not as highly as the bottom of the cross-cut.

I went into the vein below the Hornet tunnel from the cross-cut to the bottom of the shaft. As far as I went in there, the vein was about from eighteen inches to two feet wide. I followed along [382] the drifts of that vein, after I had entered from the cross-cut from the bottom of the shaft, for quite a little distance. The width of the vein there varied. The streak was from a foot to two and three feet wide; that is the way it had been taken out. Of course, I don't know how much there was in there. They had not broken into the foot; they had not broken into the hanging; it seemed they had run that shift just the width of the streak of ore. I did not see a fault there. I did not notice any fault in that cross-cut, nor at the end where it approached the upraise underneath the vein in the Hornet tunnel. It might be there, and it might not, but I did not see it.

Going east from the lower cross-cut to the drift on the Hornet vein, I thought the hanging-wall was all ore; I broke into it, and it was good ore. It was vein granite, more or less mineralized. There is a great deal of difference between country granite and vein

(Testimony of John Stafford.)

granite. The country granite is a blue granite, hard, glassy, and the vein granite is almost decomposed white granite or brown granite; it is stained with iron and such like. For a short distance you might see country granite that is decomposed. I have seen country granite with the cleavage lines through it marked with this iron stain, but I don't know as I ever saw it with the green copper stain. The country granite lies next to the vein.

I will not say that the material in the upper cross-cut of the Hornet discovery to the tunnel would be all commercial ore, but you could say this much,—that it is all heavily mineralized and all vein matter from the Hornet shaft to the tunnel. Anything that carries values inside of a vein, between two walls, or the vein matter, vein filling, is called ore. We have one wall in the tunnel, and I am assuming there is another wall south. There is a wall in the bottom of the shaft, what you could call and determine a wall, dipping south on the south side. I cannot tell where that wall shows on the rise in the east and west ends of the shaft; it might be there, but I did not see it. It is not a wall on the rise, so far as I could see, but it is on the strike. It is quartz. The granite lays on the south side of it. It would do for a wall for a location [383] until there was more development work there. On the north side of the quartz is granite and vein filling. This wall rises in the south side of the shaft about a foot, I think. I cannot tell where the permanent wall is, whether it is five feet, or a great many more feet south.

(Testimony of John Stafford.)

In 1903, I had sampled in the vicinity of the Mullins shaft in the Hornet tunnel. I believe the tunnel was run beyond the Mullins shaft at that time. I could not say whether I examined the shaft or not. I do not remember whether it was run on the vein beyond the shaft for a hundred feet, or seventy-five to a hundred feet at that time; it might have been, but I do not remember. I was down the Mullins shaft, at that time, about thirty feet. I think there was a platform over there, and the vein had been drifted on both ways from there. I do not think it had been stoped out from the tunnel. At that distance down, this drift was both ways on the vein. They had appeared to have taken out ore for the full width of the streak there. It showed the appearance of two walls, foot and hanging. I took the samples in the hanging-wall. I took one west seventeen feet from the center of the shaft. I think they had blasted holes there, if I am not mistaken, but there was a hole there the length of my arm, and I dug the sample from the face of the back, about eighteen inches in the hanging-wall. That was west of the shaft. I think that was No. 1 if I am not mistaken; that was granite mineralized. In taking sample No. 2 covered about the same amount of width, but not quite so deep as sample 1. There had been a hole drilled in there; it was about a foot deep. It looked as though it was a prospecting hole. I had a drill about that long (indicating with hands) and I loosened up from the face to the end. In that way I took sample No. 1 west; from the edge of the hole to the bottom of the

(Testimony of John Stafford.)

hole, I took sample No. 1 east, seventeen feet from the center of the Mullins shaft. There was another hole there that I took it from; that was not so deep, six or seven inches I picked in six or seven inches into the hanging. I have found in the course of my experience that the walls are more highly mineralized in close proximity to a vein. Sometimes sufficiently rich to pay for taking out and shipping as ore. Those were all the samples I [384] took in 1903. I said in my opinion they had the footwall. I did not pick into it when I was taking my samples in 1903. I merely looked at it. There had been no holes made in it for prospecting that I could see. I did not sample the vein in the Mullins shaft, or in the drifts from it. I sampled the vein at that time in order to determine if there was ore in the hanging; that is what I went there for. I did not testify in court.

I have been in the Rabbit Discovery this last visit to the ground. It is about eleven feet deep, or something like that. I said there was a little opening to the west, what you might term a drift. In that I saw very good vein material, in the little space on the west side of the shaft. The solid streaks were only about an inch wide, but it was mineralized out into the vein about eight inches; that would be taking eight inches of good ore. It looks like it is running east and west. It did not show quite up to the roof of that little drift. It did not show in the west side of the shaft; it was almost in the center of the shaft and this little opening. It was in the little opening off

(Testimony of John Stafford.)

from the west of the shaft running west, and of course, if it was running west it must have run east. The fill was deeper on the east side. This streak came up from the floor on the west end about three feet, and in the east end the fill was down pretty near the bottom of the shaft, within a foot of the bottom, and raising above the bottom about ten feet. I said the bedrock raises up about a foot from the bottom of the shaft, and that on the west end it was four feet or more. I did not see the streak in that foot in the bottom on the east side, but it was mineralized through in that trend. The granite there was mineralized. On each side of the streak it was mineralized for about eight inches. The rest of the country was vein filling, stained granite. This mineralization on each side of the streak was copper, green. The granite on each side of that was stained a little iron and quartz running through it, not stained much. This iron appeared in little fissures of the granite.

I was in the timbered shaft No. 9. I think I was there last Sunday. The lagging had been taken out on the north side. In that shaft I saw vein material, in that shaft and in the cross-cut too. [385] In a cross-cut going north I saw a little vein. I did not see that in the shaft. I thought what was in the shaft was all vein material too. It was granite stained, mineralized, and iron. I did not see any walls in the shaft. I did see walls in this little cross-cut to the north; I saw a streak there, about a foot wide. It was dipping I believe to the south, if anything.

(Testimony of John Stafford.)

There was not more than one that I know of. I went in to find it about six or seven feet; it was six or seven feet from the shaft. It was good copper ore. There was some chrysocolla in it, a little red oxide. North, towards the face of the cross-cut, I would call a quartz porphyry. It is not country rock. We have it in veins very often. It was more or less stained and stratified with iron. In the shaft itself it was what we call a vein granite. I would call it mineralized. It was a vein granite, bearing more or less mineral stain. There was no green stain in it that I saw. I was not at the bottom of the timbered shaft. To the best of my recollection, there was one or two steps of lagging removed. I do not think it exposed all the bedrock. Mr. Mason was with me. My attention was called to the character of the material that was there.

I was out on the ground in controversy this morning. I did not visit the timbered shaft again. In the east side of that shaft, where the lagging was removed, I saw vein material. I would have to see two walls if I saw a vein. Whenever I see country crushed and broken, and talc material, and stained with mineral, I call that in line with a vein. It is vein material when it is in the ground, and it is vein material when you take it out. Nature sometimes shifts the country around.

I was not in tunnel 31 this morning. I was in tunnel 35 and 36 this morning.

Tunnel 31 is above the Rabbit Discovery, or northwest. I went in that first cross-cut to the north. In

(Testimony of John Stafford.)

the north cross-cut I found ore, a vein, with at least one wall. I really believe that the face of the tunnel would be a wall. It would be the north wall; the hanging-wall. The vein is dipping there to the north, about eight inches to five feet; dipped to the north eight inches in five feet of vertical depth, that is the streak of ore. I don't know how the north wall dipped. That is how I determine the dip when I [386] do not see the wall, by the streaks in the vein, because as a rule they generally dip with the wall. According to the mines in Butte, I do not see that it is subject to exceptions, because they all dip according to the wall, the stratas do. I never saw a streak of ore dipping contrary to the vein. That streak of ore I saw in the Hornet shaft, which I said dipped from the south side of the shaft towards the north side, is a feeder to the footwall streak. They, of course, dip any old way. The difference between a feeder and a streak is only in size. I don't know how large a feeder would have to be before it would reach the dignity of a streak. In this north cross-cut, next to the north wall, the material was all ore, shipping ore. There was no copper glance close to the wall. It was a mixture of chrysocolla and red oxide. The streak next to the wall is about two feet thick. I would not say it is all chrysocolla and cuprite. Coming south from that streak, the next is very highly mineralized ore, vein matter. It is granite showing mineral stain. That extends possibly from four to six feet. The mineral stain in it is copper and iron. The copper stain is consider-

(Testimony of John Stafford.)

able, green. It lies in the granite in spots and little streaks and strata. Four or five feet of it shows the stain of copper. Then next, coming out of the cross-cut, there is about a foot of high-grade ore, the same as that in the face of the cross-cut; and on the south side of that there is vein material, quartz porphyry. There are no other mineral streaks, not distinct. That first foot streak of ore I mentioned may be ten or twelve feet in the cross-cut; all the balance of that north cross-cut from its entrance to that foot streak is vein filling quartz porphyry and granite and all mixed up. It is mixed up and impregnated with minerals, some iron and some copper.

I did not go in the cross-cut south of that particular point. I then went towards the face of the tunnel. About thirty feet in I saw the vein coming in on the north side of the tunnel. Where this vein was exposed in the north cross-cut, I did not see a hanging-wall. It did not strike me that I might find it in the south cross-cut. The vein going in the tunnel appeared in the north side of the tunnel about thirty feet from the cross-cut. I observed it in the back of the tunnel, in its progress towards the face. [387] I could not say just exactly at what angle it crossed the back of the tunnel into the south side of the tunnel. It is all mineralized, both sides of the tunnel, at that point. The vein runs right across like that (indicating). The vein, when it first breaks through the tunnel from the north side, does not appear instantly in the south side. It progresses in the tunnel probably six or seven feet before it appears on

(Testimony of John Stafford.)

the south side. As you progress in the tunnel, the vein crosses over. In my opinion, the tunnel proceeds to its face entirely in the vein, and then at the face, the north side is, I think, out of the vein. In the north cross-cut, the course of the vein as nearly as I could tell, was east and west. It crossed the cross-cut at quite a little angle. I had no compass. I was by myself several times; Mr. Mason and several others were with me in the north cross-cut. I do not think the vein at the face of the tunnel has a much different course than the course of the vein in the north cross-cut. That north hanging-wall crossed the face of the tunnel on an angle. That hanging-wall appears six or seven feet, possibly, back of the face in the north side of the tunnel. On the south side of the tunnel, it appears right in the face. On the north side of that hanging-wall is granite. I know a fault. It might be a fault there at that point, but a fault would make no difference in a vein of that kind. A fault does not shift a vein very often. You can find your vein just the same beyond, and about the same ore values. I thought that was the hanging-wall then and I think so yet. I do not see where the fault comes in on that part of it.

I went in the south cross-cut near the face of the tunnel. I found vein material there. Up in the back of that tunnel, close to the face, you can see some of those two streaks of good ore that I saw in the north cross-cut. The streaks there were small, three or four inches possibly, and possibly less. I would

(Testimony of John Stafford.)

call that the north streak; I did not see the south streak there. I did not see it on the north side of the tunnel, where the hanging-wall disappeared in the north side. There are one or two good streaks in that south cross-cut, good commercial ore, but I did not assay it. They are [388] about an inch wide, red oxide, and some chrysocolla. That south cross-cut would possibly not be commercial ore. The course of the hanging-wall I saw in the face of tunnel 31 was as near east and west as I could see, and in the north cross-cut from the tunnel it was also nearly east and west.

I believe I went down in shaft 21. It was about fourteen feet deep; six or seven feet in bedrock. It is all vein material in there. I saw a wall in that shaft, but I could not say whether it was the hanging or footwall; it might be a wall in the center of a vein. I saw it about the center of the shaft, a little to the north. It was dipping to the north. The strike was east and west. The material in that shaft below the wash was granite and quartz porphyry—iron, in place. The quartz porphyry and granite were in alternate layers, decomposed granite, and showed stains of iron. I did not see any evidence of copper. I saw two streaks of quartz porphyry in it; they were separated by granite; all the rest of the shaft was granite vein filling. The wall I spoke of was a line between one of those quartz porphyry streaks and the granite. If you take the quartz from the granite, you leave a wall, and if you take the granite from the quartz you leave a wall. Of course, you can call all

(Testimony of John Stafford.)

four walls. In that way I saw four walls, they all had the same dip and the same strike. They arose about five or six feet above the bottom of the shaft, clear to the wash. Granite is a country rock, and granite is a vein filling too, and this is not country rock. I said it was granite vein filling and decomposed granite in the line of a vein. I am just judging to the best of my judgment that it is a vein. I say it is the same strike as the vein in tunnel 31 and the north cross-cut of tunnel 31, and because of that and the nature of the materials there I say it is a vein and vein filling. Quartz porphyry is not country rock. Quartz porphyry is very often ore itself. I know there is paying quartz porphyry in the mines of Butte, but I don't know where they mine it for ore. But there is quartz porphyry in most all the ore that is ore; it will have values in itself; they ship it as ore. In any of these mines, for instance, the original, the East Stewart and the West Stewart. [389] It comes in the vein; I have seen it many, many times. I have seen it on the tenth level of the Original, and on the eight and two hundred, on the eight hundred of the East and West Stewart. I worked in the East Stewart about ten years ago. I worked in the Original about three years ago as a miner; and I worked in the East Stewart as a miner. I do not know anything about the values of that quartz porphyry, but I could see there was copper in it. The evidence was staining.

I went in shaft No. 1. It was about sixteen feet deep, and six or seven feet below the wash. It was

(Testimony of John Stafford.)

all vein filling, granite and quartz porphyry, stained with iron. There were two streaks of quartz porphyry. One was about eight inches wide, and the other possibly six inches; they were separated by granite. I did not see anything else there besides the quartz porphyry. The streaks there had an east and west strike; the dip to the north. They run about six feet above the bottom of the shaft. The granite filled the balance of the shaft; it was decomposed, stained with iron. Stratas running almost east and west. They all dipped north. I think the shaft was about four feet wide, and one of those quartz porphyry streaks was almost in the center of these streaks about eight inches wide, and the other was close to the north wall, about six inches wide. I broke into those streaks and I would say they were quartz porphyry, and not a rib of granite. Quartz porphyry looks quartz of course; it has a continuous crystallization all through it; it is what we term a quartz porphyry through this entire camp. It is not very fine grained. It is practically all one grade of fineness. It is what all miners here term quartz porphyry. I assume this vein in shaft No. 1 is the same vein as in tunnel 31 and in the north cross-cut.

I was in tunnel 30. I went down into it through a hole in the surface. I went into a cross-cut on the south side, and found very good vein material, and on the north side a different character of rock. The composition of the very good vein material was quartz porphyry and granite, stained with iron. There was nothing else in that south cross-cut that

(Testimony of John Stafford.)

I saw. I call it all vein matter in there. [390] I did not see any walls to it in the cross-cut. I saw walls on the north side of the drift. There is a division between the vein filling and a big blocky aplite, as you call it there, but I don't know what it is. The aplite lay on the north. This cross-cut was in about five or six feet, and the north cross-cut did not cut through that aplite. I saw a division and difference between that and the material up in the south cross-cut. I did not see any aplite—the material you call aplite—in the south cross-cut. The south cross-cut was still in vein material. It was actually all a decomposed quartz porphyry, some little streaks of quartz porphyry; there was some granite mixed in there; the granite was decomposed, mixed up. It was just under the fill; you could see the fill in the back. In all these openings that I was in on the north vein, I did not see any material but what was vein filling, unless it was in the face of the north cross-cut from tunnel 31.

Q. Then, in other words, while your inspection covered a very wide area on the east and west line, you apparently did not yet discover the limits of the vein in which that vein material you saw is, if it is in a vein, unless it was the northern limit in the north cross-cut in tunnel 31, did you?

A. No, sir, and that might be the limit there. And the vein might still continue beyond that.

The WITNESS.—To the best of my judgment that would be the wall in the north cross-cut. It is in a change of granite, I think; it looks very like it to

(Testimony of John Stafford.)

me. Otherwise, I did not see a permanent wall.

Shaft 21 is about 110 feet deep; that is the deep shaft. I went down in that; I went down on a ladder and in a bucket; the ladders go within twenty or thirty feet of the bottom. That shaft might be four **by six**. The shaft must penetrate the bedrock at least seven or eight feet. You can see this granite and quartz porphyry; it is stained with iron. There are several seams in that shaft. They all run in about the same general course, and apparently the same strike. I did not see any fault there. I did not see a fault there that I call a seam, with a north and south strike. I did not lay a compass on it. I do not think I was turned around. The several [391] seams that I saw, to the best of my judgment, run east and west. I know just exactly how the shaft was running when I went down, and I did not get turned around at all. The seams run almost lengthways of the shaft. The seams ran not from the side the ladder was on to the opposite side, but from the other two sides. (Sketch drawn and marked Complainant's Exhibit 29.) If the ladder is on the east side of that shaft 21, the seams run north and south, I suppose. Any way, it was from that seam that I judged the course of the vein within a vein, those several seams within a vein, and as near as I could see it was east and west.

Redirect Examination.

(By Mr. NOLAN.)

The WITNESS.—The direction of the lead I saw in the bottom of that shaft was east and west. The

(Testimony of John Stafford.)

Pittsmont is to the west of that shaft.

Sometimes the materialization is confined to the fissure, and sometimes it extends beyond the fissure. When it extends beyond the fissure, we call the material which bounds it outside of the fissure, the walls. You may have a wall to the fissure and a wall to the vein. If you strip the granite from the ore, it leaves a wall, and if you strip the ore from the granite it leaves a wall. If the granite is low grade, it is concentrated, and if it is high grade it is shipped as ore. When we encounter that matter between the walls of a fissure, it is termed by miners vein filling, vein matter.

I did not see any copper glance in the oxidized region over there. Copper glance is found below the oxidized zone; of course, some places it goes down deeper than others. I did not go beyond the depth of the oxidized zone over there.

Faults show themselves across the strike of a vein, and in running along a vein; of course, you come in contact with them, the same thing as a split in the earth crossways of the vein; sometimes very barren and sometimes very thick, and sometimes a vein; and they call here every little stringer and strata running across a vein a fault. Every little stringer or strata running across a vein does [392] not displace the vein in its strike, not at all. I have met a good many faults, and I have never yet seen one occasion a displacement of the vein.

In referring to the samples yesterday, I did not give you a list of all the samples I took and had as-

(Testimony of John Stafford.)

sayed from that ground. I got samples from the Rabbit Discovery. I got those samples on December 18th. I obtained one sample from there. Outside of the Rabbit Discovery, I obtained other samples from this northerly lead. I got one from the north cross-cut, in the Rabbit tunnel. I also obtained a third sample in the Rabbit tunnel, about thirty feet from the north cross-cut. I took those samples from streaks, and the samples fairly represent the values in those streaks. The samples did not represent the richest material there; in my judgment there was material there richer than the samples I took. After obtaining those samples I took them to an assayer; they were numbered at the time. I thereafter obtained returns from those samples.

(Paper handed to examiner and marked for identification, Defendants' Exhibit 72.)

Defendants' Exhibit 72 is the return I obtained from those samples. The returns were as follows: No. 1, Rabbit Discovery shaft eleven feet from surface, copper 15.40 per cent; silicate 47.04 per cent; No. 2, Rabbit tunnel, footwall streak about one foot wide, 11.31 copper, 65.05 per cent silicate; No. 3, Rabbit tunnel thirty feet from first cross-cut 2.39 per cent copper, and 89.01 per cent silicate.

I visited the ground this morning. I went into the tunnels on the southerly lead this morning, tunnels 35 and 36. Tunnel 35, with reference to that deep shaft, designated shaft 19, is east of it. I say there is a lead disclosed in that tunnel; vein matter and lead matter also. You encounter it about a hundred

(Testimony of John Stafford.)

and ten feet in. It is to bedrock, cross-cut running north is all in vein material and a quartz porphyry and the strike is east and west, dipping south. To the face of the tunnel is 125 feet. Possibly ten or fifteen feet of that tunnel is in bedrock; the balance is wash. I don't know that you could see any walls in that tunnel, but the [393] whole thing was in vein matter. I could tell the strike by the seams in the vein matter. There were several of them in that cross-cut; their course seemed to be east and west. I could tell the dip by the lay of the seams; they seemed to be laying to the south, dipping to the south.

I likewise visited tunnel 36. That is about thirty feet to bedrock, and fifty-eight feet to first cross-cut north. I found a very fine vein material in that tunnel. The cross-cut is all in vein material, the cross-cut north. This vein material was ten or twelve feet thick there. There is a very well-defined seam there that runs east and west, the dip was to the south. Having in mind the conditions existing in those tunnels, and the conditions existing in shaft 19, in my judgment the vein existing in those openings is one and the same vein as the Hornet Discovery vein; they are all one vein.

I went in the second cross-cut running north, the cross-cut is about twenty-two feet; that was all in vein matter. It was very highly mineralized with iron; there was no copper that I could see.

Recross-examination.

(By Judge BOURQUIN.)

The WITNESS.—There are several seams in tun-

(Testimony of John Stafford.)

nel 35 from which I judged the strike of the vein. I did not form my judgment from any one in particular. I saw seams in the little cross-cut and also in the face of the drift. The one in the face of the drift was an inch to an inch and a half wide. The seam in the north cross-cut, the end of the north cross-cut, I believe was the most showing and that dips to the south, running east and west. I also saw small seams right along the cross-cut.

I saw the seam in tunnel 36 from which I judged the strike of the vein near the end of the second cross-cut, north, pretty near the face of it. I took that one seam into consideration in judging the course of the vein. I saw other seams in that tunnel and in the cross-cut; their strike was east and west and dipped to the south. I saw one near the face of tunnel 36. That was not very large, but well defined. I thought the strike was east and west. [394] There is one on the south side of the tunnel, kind of in the hanging-wall, running, as I thought, east and west. On the south side from the mouth of the cross-cut about ten feet back from the face of the tunnel. It is sealed off, so you could only see one wall. It disappears as it goes ahead, running along the tunnel. the footwall of that seam is taken away by the cross-cut, not the tunnel.

A seam is anything that is a division,—the salvage of a vein is a seam. Sometimes they are as that paper and sometimes a little thicker. I did not see a seam that was ten or twelve feet thick. I said I saw the hanging-wall of that seam on the south side

(Testimony of John Stafford.)

of the tunnel, and running as near as I could say east and west. I did not say that I saw a footwall of that seam in the cross-cut on the north side of the tunnel. The seam is close together; in picking it off, it leaves a face, a seam. That seam appears in the tunnel at the back, about ten feet from the face, on the side of the tunnel. There was just a little line exposed there. I could not tell how far toward the face it run; I stripped it off with the pick. I saw a fault in the face of that tunnel. The fault was running across the drift, north and south. That is what you call a fault, what you have been determining a fault right along. A fault is a cross-seam across the vein. It depends on its course before you determine it is a fault; it cuts the vein off; just the same as the seam I saw on the south side, only running contrary. I saw no definite walls of a vein, not that I could say were definite walls. All the vein material seems to be striking to the east and west, everything is stratified that way. I determine the strike by stratification as well as by those seams.

Q. And because there are more seams running east and west, and but one seam in the face of the tunnel running north and south, you conclude the strike of the vein is east and west? A. Yes, sir, exactly.

The WITNESS.—This vein material that I saw in tunnel 36 is all quartz porphyry; it was not granite and aplite; the cross-cut was almost twenty-two feet across the vein material. The south side of the tunnel was granite, all along there it appeared in bed-rock. [395] In the cross-cut north, the first one, it

(Testimony of John Stafford.)

was quartz porphyry; you might say all of it; it was mineralized with iron. I saw no appearance of copper. I don't know just how deep the tunnel is there in bedrock. Farther along the tunnel to the second cross-cut north, the north side of the tunnel was quartz porphyry; there was a great deal of granite in that. The tunnel is mostly in granite. The second cross-cut north is all vein matter; that is quartz porphyry; it was not granite. I did not notice any fault or seam running north or south through the cross-cut nearest the face of the tunnel. I determine the strike by the seams and stratification. When I say the stratification, I mean the seams when you can't see the walls. There might be a wall in the north cross-cut, in the end of it. The material on the north side of it looks like granite; and on the south side it is granite; granite on both sides; that might be a wall; that is my best judgment.

A fault is a cross-seam across the formation of the country; across the vein. The effect of a fault is to divide the vein, that is all. It is like splitting a piece of wood; it must make a mark. It necessarily must shift the two ends of the vein in a relative position. Whenever I see a fault, all there is to do is to just drive through it. Any cross-fracture in a vein is a fault, regardless of the effect upon the vein.

Tunnel 35 gets into the bedrock about two feet in the face. The bedrock appears back from the face in the course of the tunnel possibly ten feet. The material exposed in the bedrock there is all quartz porphyry; vein filling. It is not granite and aplite.

(Testimony of John Stafford.)

It is not all aplite. It is what we miners term "quartz porphyry"; it is not fine grained crystallized rock; it is more of a rough-grained crystallized rock. The bedrock there is naturally full of seams; they appeared in the face of the tunnel; in the two feet of the face. Those seams seemed to be stratified east and west; they appeared to be dipping to the south; some might be vertical. I didn't see any fracture cross-ways. I think again that was vein material. There were no walls in sight.

I observed the vein between the mouth of the tunnel and the [396] Hornet shaft; the course of that vein was near east and west. That vein did not cross the tunnel coming towards the south as far as I can see. The vein did not fill the entire tunnel after it struck bedrock. It was on the south side of the tunnel. There was none on the north side so far as I could see. There is on the bottom on the north. As you come out of the tunnel, the vein keeps to the south all the way.

I did not go into cross-cut below the mouth of the Hornet tunnel; no one called my attention to it; I was not asked to go in there.

I took sample three from tunnel 31, thirty feet from the north cross-cut on the north side of the tunnel. I took that sample off the hanging-wall side. I covered about a foot or eighteen inches in taking that sample; I took it from the south side of the hanging-wall. I took it on the vein; I took it from the north side of the drift; I took it lengthwise of the vein, about eighteen inches, and up and down

(Testimony of John Stafford.)

about a foot. That was not the size of the streak there; the streak was from the top to the bottom there; I could not tell how thick it was because they are not through. I sampled that area evenly. That was not fairly representative of the entire exposure there; it is richer. I took the poorer stuff; what I left there was better than the sample. I got about 2.39 per cent copper.

Sample No. 2 I took from the north cross-cut in the Rabbit, or tunnel 31; I sampled there twelve inches wide and about three feet long. I took it from what was a part of the wall streak at that time. It was about twelve inches wide. The streak was all like the sample. I consider I got a fair average of that streak.

My next sample No. 1 was from the Rabbit Discovery; I took it on the west end; in the little opening at the west at the bottom of the shaft; that sample showed copper ore; a little streak that is exposed there, about two inches wide. At that time it stood about two feet high in that opening; two feet high in the face of the opening. I sampled it in the back; I sampled all that streak fairly. I got what I consider an average of that entire streak. I do not think there was anything richer around there than what I took. Over [397] where I took the sample in the north cross-cut in tunnel 31, the sample was a fair representation of the best that was there at the time. Where I took sample No. 3, in tunnel 31, thirty-three feet in the north cross-cut, there was richer material around there than what I took for the sample. My

(Testimony of John Stafford.)

sample does not fairly represent that streak at that point. If I had taken a fair sample I would have got a higher average. There is big pieces of quartz taken out there and I sampled the quartz of that character, very hard quartz; the object was to show there was values in the vein. I was not trying to show an average sample there. I took it from the hard quartz in place.

Referring to Defendants' Exhibit 6, I believe I saw some of that in my examinations of the Butte and Boston Placer and the lode claims claimed by defendants. I think I saw some of that in shaft No. 1 and shaft No. 2; they are about the same. There were some streaks there, six inches wide. That is what I call quartz porphyry. I saw it in more than one place. I saw it in the tunnels.

Referring to Complainant's Exhibit 21; I did not see anything like that. That is almost a feldspar, silicate quartz. It strikes me that there is quite a bit of difference between that and Defendants' Exhibit 6.

Referring to Defendants' Exhibit 63, I do not see any resemblance between that and Defendants' Exhibit 6. I may have seen material resembling Defendants' Exhibit 63 in the tunnel east of the deep shaft, in the north cross-cut. I have no name for that really. I do not call it quartz porphyry. That is a kind of rock I am not familiar with.

Defendants' Exhibit 62 is more like a quartz porphyry, or porphyry granite.

When I was down shaft 21, the fact that the Pitts-

(Testimony of John Stafford.)

mont was west of the shaft did not help me in determining the directions in the bottom of the shaft. I don't believe I guided myself in going down that shaft as to directions by the ladder; but I am sure I was right at the bottom of the shaft, and that the stratifications were running east and west.

[398] Complainant's Exhibit 22 is copper ore; granite stained or impregnated with copper. The granite, in my opinion from my experience, was stained with copper by a leaching process; by the entrance of a solution of some sort. I saw quite a bit of that in the ground in controversy. I saw a good deal of it in the Rabbit Discovery; and I saw a great deal like Complainant's Exhibit 22 in the Hornet cross-cut.

(Subscribed by the witness and sworn to January 19, 1912, before the master.)

**[Testimony of Lloyd G. Gage, for Defendants.]**

LLOYD G. GAGE, duly called and sworn as a witness on behalf of the defendants, testified as follows:

Direct Examination.

(By Mr. NOLAN.)

My name is Lloyd G. Gage. I live in Butte. My business is civil and mining engineer. I am a graduate of Cornell University, College of Civil Engineering. I graduated in 1901. Since that time I have been in and around mines all the time in Silver Bow and the outlying counties. After graduating I came to Montana; I was a resident of Illinois before I went to college. I am a United States Min-

(Testimony of Lloyd G. Gage.)

eral Surveyor. I have held a commission about two years.

I was over the ground in controversy once eight years ago, but my attention was called to this ground for this case the middle of last month. When I went over the ground about eight years ago, I did not make any specific or definite examination of the ground; I just crawled through the holes that were accessible. You might say I was there for my personal information, just looking around. When I examined the ground recently, I went at the instance of the defendants in this case. I was out there on the 15th, 16th and 17th of December, and have been out there twice since the first of the year. I think in my examination I went to all of the openings that have been testified to here. There may be an exception or two.

In the practice of my profession, I have had to do with mining claims in this and other districts.

Taking up the northerly lead, so called, as shown on Defendants' [399] Exhibit 1, and beginning with the shaft which is referred to as the deep shaft, designated on this map as No. 21, I went into that. I did not measure the dimensions of the shaft. It is approximately one hundred and ten feet deep, and approximately four by six feet; it is timbered nearly all the way down. The bottom of the shaft was through the wash and into the bedrock. I did not measure it, but the bottom of the shaft was about five feet in bedrock. The wash is not of uniform depth all over this ground. It is over a hundred

(Testimony of Lloyd G. Gage.)

feet deep at this shaft 21, and most all the other places farther east the wash is very much shallower. In a general way, I know the boundaries of this Butte and Boston placer. The surface of it slopes up to the east gradually, until you get near the eastern boundary, and then it becomes a little steeper; you would speak of the surface as smooth. Generally speaking, you can see all over the claim from most any point on it.

Going back to this shaft 21, I found rock in place in the bottom, containing copper. The material in the bottom of that shaft is either a vein or a dyke. There is no difference between a vein and a dyke, in the legal sense, so far as I know. In a geological sense, I know there is a difference, but I am not a geologist. The dyke is brought there by a molten condition, and the vein is either from altered rock or it is an altered rock, some way or other brought there in solution or decomposition. The reason I say there is no difference in a legal sense is that there are veins that carry values and there are veins that carry no values. The same is true of dykes. And to make a valid location you must have rock in place, containing ore, or containing a valuable metal, so you can locate a dyke or a vein as a quartz lode claim. I am not enough of a geologist to tell whether that is a vein or a dyke there, although there is rock in place. I say there is rock in place there carrying minerals to distinguish it from the wash. I know it carries minerals because I had a piece assayed. I could not tell from

(Testimony of Lloyd G. Gage.)

an eye inspection of it whether it carried minerals. I got the sample that I took to the assayer on the west side of the shaft, near the bottom. I took two separate samples, one maybe two feet from the north edge [400] of the shaft, and one maybe two feet from the south edge of the shaft, and in taking these samples I took the most unlikely looking rock I could find, because I wanted to see if the poorest of it contained any copper. After taking these samples I took them to an assayer, Mr. Febles; he is the assayer for the Anaconda Mining Company. I got a return from him as to what these samples contained. I have not got the return with me, but I have a copy of it; I copied it in a note-book. Mr. Febles is here in town. The samples were numbered when I gave them to him.

The bottom of the shaft was all in the same material, rock in place. I could not tell positively whether this material had a strike to it, or whether it had a dip. There were seams in it that would indicate an east and west strike. The seams contained iron, were colored, and had iron stain in them.

These samples that I gave Mr. Febles were numbered two and three.

I next examined that little hole that leads down into tunnel 30, and easterly through that hole to a cross-cut north, and a cross-cut south. I went to the face of the tunnel first, and then in the cross-cut north, and then into the cross-cut south. There was quartz in the face of that cross-cut south. It was in place. I do not know that it carried any mineral,

(Testimony of Lloyd G. Gage.)

except iron. It had an easterly and westerly strike or course. There was one seam there that would indicate a south dip. I did not come to any conclusion as to the dip. As a former witness testified here, I noticed the change from one rock on the north to this quartz on the south; it did not require any close inspection to see it. It simply suggested or showed the change from one kind of rock to vein matter. This vein matter is quartz.

I looked into shafts 1 and 2 on the northerly lead. In one I saw granite, and in the other I saw what has been termed aplite here. The granite was decomposed. It is very near the surface there, and there were seams in it. It had an east and west strike. I went down in the shaft. This material indicated a north dip. I could not tell anything about the dip in shaft No. 2; that had the aplite in it. I would call some of the matter in shaft No. 1 vein matter [401] and also some of the material in shaft No. 2 vein material. I could tell from an inspection of this material that it was mineralized with iron.

I next went up in tunnel 31; that lies southerly from shafts 1 and 2. Going into the first cross-cut,—not the first cross-cut, but the cross-cut north that has been testified to before, the cross-cut cuts the vein. For twenty feet in that north cross-cut, I found no specks or coloring of copper at all, looked like absolutely barren granite, and then came into what they called chrysocolla. The total length of that cross-cut is thirty-seven feet, and the ore goes

(Testimony of Lloyd G. Gage.)

to within a foot of the face; at least twenty feet there was no ore. There would be approximately fifteen feet of the vein exposed containing chrysocolla. I do not know whether all of that is commercial ore, but a whole lot of it is. The twenty feet I said I went through barren granite, I would call country rock. In this lead that is exposed in this cross-cut, I think I saw what might have been the hanging-wall within a foot of the face; I saw the footwall about twenty feet in from the tunnel. The strike of the lead was easterly and westerly. The dip was northerly.

I went into the cross-cut from the tunnel running to the south, and a little to the east of the cross-cut running to the north. I found granite and aplite in there. I would call it country rock rather than vein matter.

Chrysocolla is an ore of copper, and is green. Cuprite is much richer and is reddish. I found some cuprite in that north cross-cut. That cross-cut has been extended within the last month from twenty-six feet to thirty-seven feet, and they spoke of a wall in there at that time as being the hanging-wall. Now, it is extended nine feet farther, and they have cut some more ore, and they speak of the line between the core and the granite now, in the face, as being the hanging-wall. If you should go further and find lead matter still existing, I do not think that would be called the hanging-wall. And if you extended the cross-cut farther and did not find any lead matter, and found the material the same as

(Testimony of Lloyd G. Gage.)

it exists now in the face, I would call it the hanging-wall.

[402] Going easterly from the mouth of that cross-cut, when you come to the bend of the tunnel, you run into the lead again, and the tunnel follows the lead from that point, I think, into the face. There is a fault in there, a little ways in, which cuts off that stringer that the tunnel is on, but it is all vein material on the eastern side of it. The face of the tunnel is about sixty feet from the point in the tunnel where the bend is. During that sixty feet, you have a northeast strike on the lead in one place, and a northwest strike on it in another place. At the point about twenty-one feet in the cross-cut north from the tunnel the strike indicated there is northeasterly and southwesterly, and then at the face it is more east and west. I saw a compass used by Mr. Barker. The strike of the lead running through there is easterly and westerly, and more northeast and southeast.

In this lead matter or vein extending from the hump in the tunnel until I got to the face, I found chrysocolla there. I did not see any cuprite in there myself.

I went to the Rabbit Discovery shaft. It may be twelve feet deep, untimbered, and now there is a little drift at the bottom of it running westerly. It is run approximately three feet from the bottom of the shaft. I found evidence of a lead there; I found this chrysocolla with an easterly and westerly strike. There was no large body of it. It was rock in place.

(Testimony of Lloyd G. Gage.)

It had commercial value. I could not determine the dip. I uncovered the lead in that little drift myself down in the bottom of that shaft before the drift was run; that was December 15th, 16th or 17th. This drift is a matter of recent occurrence. I found this material in the bottom of the shaft to be rock in place; it was running easterly and westerly. I went down in the shaft after this little drift was run and noticed a vein running into this little drift, but I do not remember seeing it so that I would remember the dip.

I went into the Vesuvius shaft. I went into shaft No. 9. No. 9 shaft is in vein material. There is a cross-cut north, halfway down the shaft, and that discloses vein material likewise. The timbers of the shaft were not against the rock on the north side, [403] and you could see a good deal of exposed face there, and it all looked like vein material. The cross-cut from No. 9 shaft runs northerly, approximately twelve feet. I do not remember whether the face of that cross-cut was in ore or not.

I said I also went into the Vesuvius. That is off this ground. Both the cross-cut north and the cross-cut south from the Vesuvius shaft show stringers of chrysocolla that have a northerly dip and an east and west strike, easterly and westerly strike. Those stringers are an inch or two wide; there are a great many of those stringers in the cross-cut; they are probably all one vein; that is my judgment.

I took a sample in the bottom of shaft No. 19 on the northerly lead.

(Testimony of Lloyd G. Gage.)

In my judgment the mineral in shaft No. 1 on the northerly lead is a sufficient showing to make a valid discovery. A reasonable mining man would be justified in locating the ground with shaft No. 1 as a discovery, with the expectation of finding a mine and developing the property. And he would likewise be justified in locating shaft No. 2 in the same manner, with the reasonable expectation of developing a mine. And a reasonable mining man would also be justified in locating the ground with the mineral showing in shaft No. 9.

Q. Having in mind the conditions that exist there in those different openings about which you have testified as to the existence of a lead there, what is your judgment as to whether it is the same or different leads that appear in those different openings.

A. It is my judgment that they are on the same lead.

The WITNESS.—I went down in shaft No. 19 on the southerly lead. It was approximately 80 feet deep.

That north and south line, marking the boundary of this ground in controversy was not shown to me when I was on the ground, so I cannot tell whether this marking of the shaft on Defendants' Exhibit 1 and this marking of the shafts on Complainant's Exhibit 14 is correct. In the case of Defendants' Exhibit 1, the shaft is shown some distance [404] easterly of the line. There is an error either in the platting or the survey, one or the other. That is, it is apparent to me that there is an error, either on

(Testimony of Lloyd G. Gage.)

that map, if that dark line running off to the south is a boundary line, or else there is an error in this map if the red line marks the boundary.

I found rock in place in shaft 19 containing copper. I obtained one sample for the purpose of having it assayed. I took a sample through the talc there, leaving out anything that looked more like mineral than anything else. I took it to the same assayer, and marked it sample No. 4. I got a return of two-tenths of a per cent copper. You will find talc either in a vein or on the edge of a vein, or on the boundaries of a vein. You will see this talc on the north face and on the west face and on the east face, and it would indicate an east and west strike. I could not determine the dip. The rock in place there was decomposed granite and this talc. There was some iron-stained material there too. A decomposed granite you may find outside of a vein, and this talc you will find within a vein. It was vein matter.

I next looked into tunnel 35 and tunnel 36 and tunnel 34.

I could not see a vein in tunnel 35. It was in wash to pretty near the face, and I might say it was decomposed granite.

The openings in tunnel 36 showed decomposed granite, and stringers of what have been termed aplite or quartz. I found little veins in there; little stringers of either aplite or quartz, all through this ground. They have no particular direction or course. There was one stringer that they followed, I think, in the last working to the north, that had a

(Testimony of Lloyd G. Gage.)

strike and a dip to it, that you could follow for ten feet. It had a northerly and southerly strike. I don't remember whether it went to the face of the cross-cut or was cut off by some little fault. The material in there as I remember it was decomposed granite and quartz and aplite. The existence of the quartz there would indicate a vein. In the southerly workings of that tunnel 36, they do not show these little stringers, and as you go north in the northerly workings you see more. That would indicate to me the vein is north.

[405] I went into tunnel 34. The tunnel is in wash for approximately thirty-five feet, and from that point or a little farther in, it follows a lead clear to the face. There was an apparent footwall on the left-hand side of the tunnel. There is a hanging-wall to the stringer that that tunnel is on, but there is vein matter south of that stringer. That is not the hanging-wall of the vein there; there is too much copper south of it; it shows itself in all the openings south. There is a cross-cut south from the tunnel to the Hornet discovery shaft; there is the Hornet discovery shaft and the cross-cut northerly from the bottom of the Hornet shaft into the stringer there, and also a drift going westerly from the bottom of the Hornet discovery shaft, and they all contain copper. I think that the rock in those openings is a portion of the lead. It is mineralized, very much in places, and it is all mineralized some. Under certain conditions all of that material could be mined at a profit.

(Testimony of Lloyd G. Gage.)

difficult to distinguish it from the vein quartz; you do not judge a rock by the stain on it; it might more or less obscure the outside texture of the rock. You find copper distributed more or less through the Butte District, and in some places not at all; it is in altered granite considerably in Butte; that is what alters the granite; it is altered by the action of the copper. Granite is vein material when it is in a vein. Granite usually forms the boundary of veins in [407] Butte. Copper is not found outside of the vein in rock in place; it is not outside of a vein when it is in a seam, nor is it outside of a vein when it is in rock in place and the rock in place is granite. If you find copper in rock in place, then it is a vein. Rock in place is rock that has not been eroded; rock in the original formation. The vein is rock in place, and the country rock is rock in place. You do not find copper in the country rock, when the country rock is granite. If you found two-tenths of one per cent of copper in granite in place, and it had boundaries, it would be a vein. If you can run from two-tenths of one per cent copper into granite that has no copper in it that would be a boundary. There must be sufficient depth to constitute a deposit of mineral in place, containing copper and having a boundary. The boundary would be the point between the place where there is copper ore and where there is no copper ore. It is not true that you always find a trace of copper any place within a radius of a mile or two of the Butte District; I have taken samples of granite in Butte that have gone no cop-

(Testimony of Lloyd G. Gage.)

per. In my judgment a deposit such as I have described would constitute a vein, if the place can be discovered where there ceases to be copper without regard to its extent, except that it must be a deposit of rock in place with boundaries. There would not need to be any greater values than two-tenths of one per cent copper. Two-tenths of one per cent is ore; it is ore if it contains copper.

I am less familiar with aplite.

Q. You would not sink on an aplite dyke with the expectation of mining ore, would you?

A. I would have to see the aplite dyke first.

Q. Do you know of any aplite dykes in the Butte District that one could work profitably for any metals that they contain?

A. I am incompetent to answer that.

The WITNESS.—I have not formed any theory as to how the veins are formed in the Butte District. They are spoken of as fissure veins. That presupposes two walls forming the boundaries of the fissure; the fissure is a crack in the earth's crust, more or less regular in its strike. I am not sure, but I think aplite occurs as dykes and intrusions. I know of shafts that have been sunk in aplite; I do not know of any shaft deeper than fifteen or twenty feet in aplite. The presence of aplite is no proof of the existence of a vein. The characteristics of a vein are rock in place containing one or more of the valuable metals. [408] Mineralization is one of the things you look for. Besides that, you look for walls,—not necessarily look for them, but when you

(Testimony of Lloyd G. Gage.)

are speaking of a vein, you are speaking of something that has a boundary. You would not have a vein without walls. Within my experience you would find talc there. All those things combined will enable you to tell whether you have a vein in any particular instance. There might have been some talc in shaft 21, but I did not notice it particularly. There would be talc in between those little seams. I remember of having seen some there. I would call the material in the bottom of that shaft porphyry, the whole thing. I did not say there was aplite there, and if I did it was a mistake. Porphyry is an intrusive rock. You can find more values in porphyry than in aplite; it differs in appearance from aplite. I also call it quartz next to the quartz in the cross-cut south from tunnel 30; I would call it quartz; some people might call it quartz porphyry, but I call it quartz. I cannot think of any other place than shaft 21 where I found porphyry. The only indication that the vein which appeared in tunnel 31 was shown in that shaft is the strike of the vein in tunnel 31, and the Rabbit Discovery and the Vesuvius Discovery and shaft No. 9; that was in the direction of shaft 21. I call it a vein in shaft 21 for the simple reason that it carries copper. I told you on direct examination it was a vein or a dyke, and that a vein and a dyke are the same thing when it comes to mining. I did not notice any porphyry in any one of those places I have mentioned. You could find a vein in one place carrying chrysocolla and cuprite and vein quartz, and in another

(Testimony of Lloyd G. Gage.)

place the same vein filling being porphyry as in shaft 21. The ground between shaft 21 and the Rabbit Discovery are a good many feet apart, and a good many changes could take place in that distance. I could not tell you whether the porphyry has displaced the vein in shaft 21; I say it is a vein there; I say it is a vein in the bottom of shaft 21.

**[Testimony of Pat Mullins, for Plaintiff  
(Recalled).]**

[409] PAT MULLINS, heretofore called and sworn as a witness on behalf of the complainants, being recalled, testified as follows:

Direct Examination.

(By Mr. SHELTON.)

The WITNESS.—Since I was on the stand the other day, I visited the property in controversy in this case; I went down there last Saturday. I went into Tunnel No. 36. It is marked on a stick 36. I did not find anything in the tunnel in the way of a vein. I examined all of the cross-cuts and branches of the tunnel. I also went into the Mullins or Mason tunnel, whatever they call it. I went into the winze at the bottom of the level of the Mullin tunnel, and in through the bottom of the Hornet shaft. The winze is in the bottom of the level, within about fifty or sixty feet of the shaft that was sunk on the vein, west of the vein. I went down into the winze ten or twelve feet. I found the vein there; the vein that was worked on in the level above and also in the shaft that I sunk; the vein is drifted on some little

(Testimony of Pat Mullins.)

distance. From that drift I went into the Hornet shaft, through a cross-cut. After having reached the Hornet shaft, I went into the cross-cut to the southwest. I should judge that cross-cut is twenty feet long. I then came up the Hornet shaft about ten feet, and came back to the tunnel. I discovered no other vein there outside of the vein in the Mullins tunnel. I did not visit any other openings than those I have described. I walked over the ground to the north, but did not go down the shaft; there was no convenience there that I cared to go down on. The vein and vein material in the Mullins tunnel would vary anywhere from three to probably six feet.

Cross-examination.

(By Mr. NOLAN.)

The WITNESS.—I was over there making this examination from an hour and a half to two hours. The upper portion of the Hornet shaft I know was in existence there in 1895. I think there is another one to the south and west that was there in 1895. I would say there are three and maybe more shafts on the ground there now that I noticed there in 1895. I know there has been more work done there [410] since. No. 1 shaft, that is on the northerly lead, has been sunk since 1895, a portion of it,—a portion of it was there at that time. I don't know how large that shaft is now; in 1895 it was probably twenty feet. It is more than ten or twelve feet now; it is timbered with square, eight by eight timbers, the one I have reference to. I was at the No. 1 shaft on Saturday; I did not see any number on it; I saw a

(Testimony of Pat Mullins.)

number at No. 36 tunnel, but no number on any shaft. I only examined the timber shaft and the Hornet shaft. I noticed probably a dozen shafts on the ground Saturday. Maybe half a dozen of those were in existence in 1895; the timbered shaft was one of those; and the Hornet shaft was another that was in existence in 1895. I did not go down the timbered shaft Saturday. This shaft was probably twelve or fifteen feet deep in 1895; it is probably forty feet, maybe more now. I was probably down it in 1896, and knew the depth at that time. The Hornet shaft has either been sunk since 1895 or cleaned out. I went into the shaft at different times, and I went down ten feet deeper this time. It might have been cleaned out or may have been sunk deeper. I say there was nothing at all in tunnel No. 36; there is granite there and streaks of aplite, running in all directions, but no vein. The aplite is altered and broken up. The aplite is discolored; it is not the same color as the granite. I don't know what caused the discoloration; I don't pretend to be a mineralogist. I don't know whether it is mineralized or not. The thickness of the body of aplite I saw there would be from two to probably six inches, maybe a foot in places. I noticed these streaks in different places in the tunnel; all the way in. I examined the material in the cross-cut of the Mullins tunnel to the Hornet shaft; I found broken up granite material, not in place in a vein. There were spots through the granite that you will find mineral in through the broken-up material. The granite is changed by not being deep

(Testimony of Pat Mullins.)

enough, where the granite was placed too close to the surface it is broken up,—broken up porphyry granite. I made an examination of the Hornet shaft. I did not find any broken up granite like vein filling there. If there was ore there, I would call it vein matter, even if it was outside the walls of the fissure. I saw one little bunch of that [411] vein material there. I would call it a stringer where you find it in the country rock, or a bunch. You will find it anywhere in the country rock out there. That piece you have in your hand there, you might get a piece of that out there, or more, but you could not call it a vein. You will find it anywheres. You will find that in spots most any place, but you don't find it in a vein in spots. You will find one spot in the Hornet shaft. You will find it for a mile across there, running north and south, crossing that whole country. I made two trips out there and that is all you can get out of me. You can go out and get the samples yourself if you want them. There is a little bunch of it in the Hornet shaft, to the south of the southeast corner. You will also find a little stringer in the tunnel in the cross-cut near the Hornet shaft, about seven or eight feet from the Hornet shaft to the north of the cross-cut. I found it only in the one place. I found material like Defendants' Exhibit 27, but not in the cross-cut. I would call that ore principally. If I found that in any appreciable body I would be willing to locate it as a mining claim. I saw material the same as Defendants' Exhibit 29; I saw it in the Mullins or Mason tunnel; I saw it along

(Testimony of Pat Mullins.)

in the bottom of the tunnel, on this lead, the vein that I worked. At the time I had the conversation about which I testified with Mr. Forestell, a gentlemen by the name of Barki Benard was present.

(Subscribed by the witness and sworn to before the examiner January 15th, 1912.)

**[Testimony of James F. O'Brien, for Defendants.]**

JAMES F. O'BRIEN, called and sworn as a witness on behalf of the defendants, testified as follows:

Direct Examination.

(By Mr. FITZGERALD.)

The WITNESS.—My official position is chief deputy clerk of the District Court of Silver Bow County, Montana. I was served with a subpoena to bring the judgment-rolls in cases Nos. 3620 and 3621, entitled Charles F. Fassmore and others, against S. V. Kemper. I haven't them with me; I was unable to find them in the office, however, I have receipts in the files. One of them was taken out by Mr. McBride on January 13, 1902; that was 3621; and 3620 was taken out by Alex Mackel February 28, 1901. Both of the attorneys are out [412] of town and I was unable to find anybody in the office to get them, so I have nothing in our office outside of the receipts for them. I understand Mr. McBride is in Portland; he has no office here. I tried to get into Mr. Mackel's office this morning, but was unable to; I understand he is in Dallas, Texas.

Mr. SHELTON.—We will not make any objection on the ground that the original files are not produced,

(Testimony of Lloyd G. Gage.)

if it is proven that the copies are correct copies.

Subscribed by the witness and sworn to before the master January 17th, 1912.

**[Testimony of Lloyd G. Gage, for Defendants  
(Recalled).]**

LLOYD G. GAGE, heretofore called and sworn as a witness on behalf of the defendants, being recalled, testified as follows:

Cross-examination.

(By Mr. SHELTON.)

The WITNESS.—I stated Saturday that there was a vein in the bottom of shaft 21. Upon my direct examination I said it was either a dyke or a vein. The only difference between a dyke and a vein is a difference in theory. A dyke is supposed to be an intrusive rock that comes into a fissure in the earth,—the earth's crust,—and a vein is formed in some other manner. The dykes are generally formed of igneous rocks; that would include aplite and porphyry. If the aplite dyke is not mineralized, I do not believe it would be a vein. If we suppose it contains a little mineral at the surface, or near the surface, but not at any depth,—say that it contained iron, it would be an iron vein. If there is present any valuable mineral, in any appreciable quantity, however small, it may be located as a vein in my judgment; it would be subject to location if it is in rock in place containing valuable minerals.

Q. Do you think that there would have to be sufficient mineral, or sufficient showing of mineral, such

(Testimony of Lloyd G. Gage.)

as to warrant the miner in expecting to find ore that might be taken out?

A. He might want it for the iron alone.

Q. But suppose that the only iron is a mere superficial deposit, a mere stain from the surface, and it is in an aplite dyke, would he have any reasonable expectation of being able to find iron at depth there?

A. He would.

Q. Would you recommend sinking on an aplite dyke of that kind with the expectation of finding iron ore? A. I would not.

Q. Do you think any miner in good faith would expect to find such ore? A. I think he would.

Q. A reasonable miner? A. Yes, sir.

Q. Well, would you explain to us why you think you might find iron ore in an aplite dyke of that character?

A. No, I have no theory on the genesis of the origin of ore.

Q. Well, of course, he would not be able to make a valid location, except he was acting in good faith in making his location? A. That is a statement.

Q. Well, do you agree with it or not?

A. He must act in good faith in making his location.

Q. And a man would not be acting in good faith in making a location, unless the situation was such as to warrant him in expecting to find ore or mineral in paying quantities? A. That is correct.

Referring to Tunnel 36, I was in there yesterday, and I found seams in at least six places that had an

(Testimony of Lloyd G. Gage.)

east and west strike, and they dip to the south. The tunnel evidently, after the first cross-cut to the north, was run on its easterly course along one or two of these seams. There is a break just before you get to the second cross-cut, by a couple of north and south slips, and then right near the face it is not as apparent as it is during the rest of the distance. [413] Those seams are little seams in the granite, filled with quartz and aplite. They might indicate the presence of a vein at some other place, and you might call the little seams veins. I call them seams. I do not call them veins. There is a little aplite there in 36. I could not say that it is in the form of a dyke. It only contained iron that I could see. The presence of the iron in the aplite does not make it a vein; if there was copper instead of iron in it, I would call it a vein. Tin, I guess, and lead or zinc, besides gold, silver or copper, would make it a vein, and maybe you would have to find the presence of one of the valuable metals to even make the lead and zinc a vein. By the valuable metals I mean, gold, silver, copper and tin; I don't remember whether there is more or not.

A dyke and a vein are the same thing,—geologically they are different, but in the light of the law they are the same. There were no definite boundaries disclosed in shaft No. 21; the vein did not have definite boundaries outside of the shaft that I know of. A vein has definite boundaries; there is one boundary disclosed with the present development in the shaft. I will say it is a vein; I know there are

(Testimony of Lloyd G. Gage.)

boundaries to it, but where I don't know. I do not know anything about its strike or dip. I do not know where the mineral ceases to exist outside the boundaries of the shaft in the vein. I think that dyke is porphyry. There are boundaries to a dyke. There are seams in it that indicate its strike, and they might not. There is nothing to indicate the course of that dyke outside of the seams.

I was in shaft No. 1 and No. 2. I went down to the bottom. I found vein material in them. There might have been walls of the vein in shaft No. 1; I could not say whether there was a wall or not. I did not find anything in any way resembling what I saw in shaft 21, except the line between the wash and the bedrock of one, and between the wash and bedrock of the other. There was bedrock disclosed in both of them. I noticed no porphyry in shafts No. 1 or 2. I said I found vein material there. I mean by that material that I sometimes find in a vein, and that I sometimes find outside of a vein. There is a vein there. The presence of the vein material [414] shows it conclusively. You can tell the difference between the vein material found inside of a vein from the vein material found outside of a vein. You would not have to have the walls of a vein to tell that. I can tell the presence of a vein by the existence of vein material, although there is not a wall showing.

I said I found some talc in shaft 21, but it is not very noticeable. You find talc in faults and on the edges and through veins. Talc is clay. You find it

(Testimony of Lloyd G. Gage.)

in many different places. You do not find it outside of veins or outside of faults. It would then be called clay. You might be referring to a deposit of clay then. Talc is, to all appearances, the same as clay, but clay is of a different nature from talc. You speak of talc in connection with faults and veins. Wherever there is a fault, there has been a movement of the two walls on each other, and the movement has ground up the rock which composed the walls of the fault, and that would produce talc; and also the fissure can be filled with vein material and then ground up and a movement take place. There are many of those little faults running through the country there, and in all of them there is more or less talc. It could be possible that what I observed and called seams in shaft 21 were little faults. A fault could run in any direction across the country, but they have general directions around Butte. A vein has to have a wall or a boundary to be subject to location. They do not have to be disclosed in the discovery, but they must exist, or the law presupposes the existence of a boundary when you discover valuable minerals. I think the mere discovery of valuable mineral is sufficient.

Referring to tunnel 30 and the openings connected with it, I said I went into a cross-cut running south from that tunnel, and found quartz in place there carrying iron. I would call it a vein. It did not carry any other mineral besides iron that I know of. I said a little while ago that the presence of some one of the valuable minerals was necessary to constitute

(Testimony of Lloyd G. Gage.)

a vein, but the vein does not have to carry valuable mineral throughout its entire length and dip. It can have absolutely no iron, or no mineral whatever in it and still be a vein. It is just necessary to have a trace of valuable mineral to make a valid discovery. This one did not contain any [415] other mineral or metal at that place that I know of. It contained such minerals in shaft 21, shaft No. 9, the Rabbit Discovery, and down in the Vesuvius shaft, assuming that it is all one vein, yes, sir. I know it is a vein. There is quartz shown in the south end.

Q. Well, I ask you to assume for a minute that there is no connection between what is shown in that cross-cut and anything shown in the other openings you have named, and then I ask you to state whether or not that is a vein, with the assumption that there is no connection between them and anything shown in the other opening, is it still a vein?

A. Yes, sir.

The WITNESS.—The presence of valuable mineral is necessary to make a location on a vein. A vein may be barren or it may have values. The presence of valuable mineral is not necessary to make a vein; you can have a vein without any mineral at all, even without iron. An aplite dyke is not a vein according to my idea. A vein is simply a fissure in the earth's crust filled with vein material; vein material does not necessarily include any mineral.

Q. Now, going over to the Hornet Discovery, what fissure is there there filled with vein material?

A. If you want me to, I think I ought to bring in

(Testimony of Lloyd G. Gage.)

all of the definitions of veins I know of to reply to your different questions. The definition of a vein is a very loose definition and the one I just gave you would not apply to the Hornet Discovery shaft as far as I know.

Q. In other words, in the definition you just gave, if it were taken as a correct definition, then there is no vein at the Hornet Discovery, is there?

A. It might and it might not be a vein.

The WITNESS.—I found a vein in tunnel 31, and at one point in the vein I found a northwest strike and at another point in the vein I found a northeast strike. I could not determine the true strike of the vein from the one tunnel. I could determine the strike in its extent as shown. The strike is northeast and northwest, both, at different points. I cannot tell its course beyond the tunnel, or beyond the points where it is actually disclosed. [416] Yes, sir, there is something outside of tunnel 31 that will enable me to tell its strike. You do not encounter the same kind of material in shaft 21. You cannot tell the strike of anything shown in shaft 21; there is nothing in shaft 21 that will aid you in determining the strike of the vein shown in tunnel 31. Yes, there is something that will enable you to connect the vein in shaft 21 with the vein in tunnel 31; the workings to the easterly of tunnel 31 will enable you to determine it. Yes, shaft 21 is west of tunnel 31. The vein is at least twenty feet from the center of the main tunnel, as shown on Defendants' Exhibit 1; that is a wall of a vein; it indicates the southern

(Testimony of Lloyd G. Gage.)

boundary of a vein. There is mineralization beyond the wall to the north. There is no mineralization beyond that wall to the south that I could see. There is no stain in the granite. There is no copper stain in the cross-cut to the south of the point twenty feet in that I spoke of; there is no copper stain to the south. If there were copper stain there I would change my statement as to the southern boundary of the vein. If there was any copper stain there whatever I would take it as being a part of the vein. I looked through there fairly carefully, but did not see any copper stains. Going eastward in tunnel 31 from this cross-cut you again encounter the vein at a point about thirty feet, at a bend in the tunnel. That is the wall of the vein. It indicates the southern boundary of the vein to me. The vein dips to the north. This tunnel 31 and its cross-cuts are correctly represented on this exhibit, Defendants' Exhibit 1. I did not measure the cross-cut south from the first cross-cut north in tunnel 31. The rest I know is correct. I do not think he has indicated the full length of the cross-cut south at the face.

Q. Well, if you took those two points as indicating the southern boundary of that vein at different places on its strike, and took the southern boundary as indicating the strike of the vein, what direction would you have as indicating the strike of that vein?

A. Northeasterly and southwesterly; that is one of the places I took.

The WITNESS.—I went along the tunnel in an easterly direction, [417] and encountered a fault

(Testimony of Lloyd G. Gage.)

running across the tunnel in a northerly and southerly direction, then toward the face of the tunnel I found another fissure. I took that as indicating the north wall, or a seam parallel with the vein. I do not remember the dip of that fissure. It is not true that the only mineralization we find in that fissure is near the face of the tunnel. I think there is copper in all that rock south of that. At the fault going on Complainant's Exhibit 17, the blue line, marked ninety degrees, north twenty degrees west, by the fault, we refer to on the east of that fault, it is all in vein material, it contains copper, all of the rock. There is a very light stain of copper in places; that is a characteristic of the granite generally on the east side of the fault, and not a characteristic of the granite on the west side of that fault. This staining does not extend over all of the granite. It shows a very well-defined boundary right there; it shows vein right there on one side, and not a vein on the other. It shows a stain on one side,—that would be on the northerly side of this fault I was speaking about; not on the southwesterly side of the fault, and on the southerly side of the lead. I term the easterly end of that tunnel vein.

Q. Well, what is that crevasse in the rock, represented on the map, Complainant's Exhibit 17, by a blue line running in a southeasterly and northwesterly direction?

A. It may be the hanging-wall of the vein.

The WITNESS.—I do not know whether it is the hanging-wall of the vein or not. I got my south-

(Testimony of Lloyd G. Gage.)

easterly and northwesterly strike right there. I took that as being the strike of the vein. There is nothing except that fissure, that I saw, in that locality that has a northwesterly and southeasterly strike. That vein and the vein shown in the northerly cross-cut both dip to the north; they have the same dip. I took no note of the dip of the vein near the face of the tunnel, but I think I recollect it as being flatter than it is in the cross-cut. There is staining in the right hand corner of the face of the tunnel, but I don't remember about the left hand corner. If there is any staining beyond the place where that fault is represented here, you might still take that as the [418] hanging-wall of the vein, and in that instance the hanging-wall would not represent the boundary of the vein. Southeasterly, this Rabbit Discovery shaft shows the continuation of the vein. North-easterly there is nothing to show the continuation that I know of. You could speak of the Rabbit Discovery as being easterly as well. There is no vein directly east of tunnel 31 that I know of; that is directly east of the face of the tunnel.

Q. And what is there to indicate to you that the lead that you testified about in tunnel 31 runs in the direction of shaft No. 21?

A. The strike of the vein, as shown at one point in tunnel 31, is directly toward the shaft No. 21; that is to say, the strike of what is represented on Complainant's Exhibit 17 as a fault running in that direction.

The WITNESS.—That is the only thing in tun-

(Testimony of Lloyd G. Gage.)

nel 31 to indicate that the vein I have testified to goes into shaft 21. The vein is shown in the south cross-cut near the face of the tunnel; I did not see the wall there. The vein material was along both sides; I do not remember that I examined right in the face. The vein showing near the hump in the tunnel is what I call the footwall of the vein.

Q. And if that is the foot-wall and the hanging-wall is some place near the face of the tunnel, then you must have the width of the vein exposed between those two points?

A. No, sir, there is a fault between, and that may have dislocated the vein.

The WITNESS.—If there was a dislocation of the vein at that point, you could still take into consideration the portion of the vein which lay east of that dislocation of the vein and determine the strike of the portion of it which lay west of it. The dislocation might not make the strike vary at all, and it might make the strike bend. The portion of the vein west of the fault would not necessarily more correctly indicate the strike of the vein. It might give it exact, and it might vary some, just as is shown in those two places in the tunnel. If any part of the vein occurs in the Rabbit discovery, it has, I should judge, been placed there on account of the dislocation of the vein, due to the fault represented on the map, Complainant's Exhibit 17.

[419] Q. And if that is true, why then could you not draw a straight line through the Rabbit Discovery and the north cross-cut from tunnel 31, and take

(Testimony of Lloyd G. Gage.)

it as indicating the strike of the vein because it would not be all on the vein, would it?

A. It might be on the vein, but it would not indicate the strike.

The WITNESS.—You would not have to draw such a line in order to get the strike of the vein toward shaft No. 21. A straight line from the Rabbit Discovery through the cross-cut north, would be in the general direction of shaft 21; such a line would be right along on the course of the vein. If you took the course of the vein as indicated on Complainant's Exhibit 17 it would be across it; that approximately represents the strike of the vein as far as it is shown in the north cross-cut. When the map was drawn it correctly indicated its strike of approximately north eighty degrees east. Further developments show that it would be nearer east and west. Still more developments might show it northwest and southeast and probably will. That is one way of looking at it, but another way is that the vein is widening at that point, and the south or footwall of the vein has to take a southwesterly strike to gain this extra width at that point. I am assuming that the vein is taking an extra width for the sake of illustration. There is also that change of strike in the cross-cut, which is a good indication of it. The strike is more easterly and westerly, the farther you get in the cross-cut, the farther you go north. That would indicate a widening of the vein. It might also indicate that there is a slight variation in the different stringers in their course. My explanation would be

(Testimony of Lloyd G. Gage.)

that it indicates a widening of the vein. I also pay attention to the composition of the vein as it is indicated farther east in the tunnel. Not right at the hump of the tunnel, because the vein has a north-easterly strike at that point.

I found certain stringers in the cross-cuts north and south of the Vesuvius discovery; all a part of the northerly vein. I assume that they are from what I saw on the ground there. Those seams are about an inch wide; three or four inches some of them; maybe the one that is indicated at the drift east on the cross-cut south would [420] be a foot wide. The filling in the seam is chrysocolla; they are in granite. I have not seen cracks in the granite filled with that material that were not veins. I understand from Mr. Winchell that there are joint planes in the granite; I have seen such cracks in the granite, and when Mr. Winchell used the expression "master joint," I understood what he was talking about; I had not encountered the phrase before, but I have the conditions. Comparatively speaking, those joint planes of the granite are short; I do not think they have any great depth. The circulation of the surface waters is liable to deposit more or less minerals in those cracks and joint planes, and it is likewise liable not to. Such a deposit could not be mistaken for a small vein; I think I could always distinguish them. Such a deposit of mineral in a joint plane would be a vein. There is a distinction between those master joints and a vein—one that any man can see. In my judgment they are veins.

(Testimony of Lloyd G. Gage.)

In mining I would not sink on a joint plane, if I knew it were a joint plane, but if I knew it was a vein I would sink on it, or a fault. If the indications of mineral were sufficient in the fault, I would sink on it. There is not legally any difference between a fault and a vein.

In shaft 19 I found principally talc in the bottom. That is the only rock in place you could see—talc with a little quartz in it. The talc was part of a wall or part of the vein. The rock in the bottom of the shaft was granite. I found there granite and talc and quartz and iron stains and copper. The copper stain was not appreciable. I had to have an assay in order to determine it. The returns showed two-tenths of one per cent copper. There are no cross-cuts from the bottom of the shaft. I do not think that a sample taken any place in the country would show as much as two-tenths of one per cent copper. I saw the talc and the granite, and the line between the talc and the granite. There is quartz in that; the quartz was loose in the talc. The quartz would indicate a vein. There would not be more or less quartz in the talc almost any place; you will not find quartz and talc in a fault in which there is no mineralization; there is more or less quartz in granite, but that was vein quartz in the talc—good looking quartz. The pieces of quartz were small. There was about a foot of the talc seam exposed. [421] It was on the north, east and west sides of the shaft. I did not take its strike exactly. South of the Hornet shaft, there was a seam in the bottom of the Hornet shaft

(Testimony of Lloyd G. Gage.)

which might have been the wall of the vein. I cannot tell you whether it is or not; I am under the impression that it is. If the wall of the vein is farther south from that point, it is not, and if it is not farther south, that is the wall. When I speak of the hanging-wall of the vein, I mean the southern boundary of the vein there. There is a seam showing in the south part of the Hornet shaft, right at the bottom; there is an opening twelve or fifteen feet westerly from that seam. The seam runs easterly and westerly. There is the line of the seam on the south side of the seam. There is a fissure shown in tunnel 34 with walls. I do not know how the seam was formed which I call the hanging-wall; it is there.

Q. If there has been any extension of the vein by the spread of mineralization, that spread of mineralization could not result in a seam or vein marking the southerly boundary?

A. I don't know. There is a seam there, and north of it is a deposit of copper ore. I could not account for it.

The WITNESS.—I made an examination of the cross-cut running north from tunnel 37. It is almost all what you call aplite, and for a distance of twenty feet from the shaft, running in the mouth of the tunnel, it is stained with this copper, and in some places it is thicker than in other places, and conditions are about the same as they are in the cross-cuts from the Mullins tunnel to the Hornet shaft, except that the rock is nearer aplite than it is granite. I did not take any samples from there; I did not have

(Testimony of Lloyd G. Gage.)

any samples assayed.

Q. And how much of the face of that cross-cut appears to be stained, speaking particularly of the part north of the tunnel 37?

A. I did not examine the face, because the shaft at the end of it goes down below the level of the tunnel, but as far into it as I could examine, it was stained—good copper—and for a distance south of approximately twenty feet I could find the deposit of copper; that is, south from the face and from that shaft.

[422] The WITNESS.—I found ore there; it was all ore. I use the term ore as meaning mineralized rock, that is commercial ore that would pay to work.

Q. There is no indication of any boundary there, was there?

A. It is covered up with wash. There is a boundary there because there is no copper stains that you can see when you get to that hole in the ground.

The WITNESS.—You are in the wash there. The wall there would not be the line between the bedrock and the wash. I did not examine it very carefully, but the reason I made that approximate measurement was because I failed to find the copper stains to the south. I could not examine the north space. I did not see any entirely unstained aplite there. I looked pretty carefully along the sides there and I could find copper stains. I found nothing there unstained. I did not see Mr. Winchell's sample. This is Complainant's Exhibit No. 21. I did not see any rock there like that. Rock like that could have been found there, but I did not see any and I looked pretty

(Testimony of Lloyd G. Gage.)

carefully, too. I saw no rock like that from that cross-cut; I call it quartz; it may be aplite, it looks more like quartz to me. Aplite is mostly quartz anyhow. You make a distinction between quartz and aplite, and aplite and granite. You can take one piece of rock and it will have granite and aplite and quartz in it. The geologists are able to distinguish between aplite and quartz; I would not always be able to do so.

I do not know, but I think that stained rock that I found there is a rock which can be concentrated; I never have tried it. Chrysocolla is a silicate of copper, and if the rock containing it was crushed, I think you would find that copper pretty evenly distributed throughout the crushed particles. I should imagine, under those circumstances, it would be very difficult to concentrate that rock, by water concentration. But concentration by water would not be the only method by which it could be worked. They were experimenting with that ore from over in that vicinity at the time that ore had a commercial value—that three per cent copper ore—and I think they had developed a method by which they could mine it at a profit and mill it at a profit. There is besides water concentration, [423] dry concentration and electrical concentration. I do not know there is any such method of concentration now in use. They have tried them, but they were not practical here. I say the ore could be sorted and worked at a profit.

Q. In at least it could be sorted and worked, and whether it could be worked at a profit, would depend

(Testimony of Lloyd G. Gage.)

on the quantity of high grade rock, wouldn't it?

A. Yes, sir.

The WITNESS.—You could start right in on any of those faces where this high grade ore is shown. If I was going to mine it, I would put a hole in there; I would start mining, and determine it as I went along.

I said tunnel 36, I said there were indications of a vein. I think the ladder in shaft 19 is on the west side, in the southwest corner.

Q. I will call your attention again to this sample 66. Calling your attention again to the larger piece contained in sample, Defendants' Exhibit 66, I will ask you what the reddish material is in the central part of the freshly broken side of that piece?

A. I think it is a stain—really iron stain. I cannot tell by looking at it whether it is an iron stain or a copper oxide stain. I think it is just an iron stain on it.

The WITNESS.—Cuprite is the red oxide of copper. I never knew of tenorite until Mr. Winchell spoke of the black oxide of copper, and this red material may be tenorite instead of copper glance. Tenorite is an oxide of copper; it is not the red oxide of copper. It may be tenorite, that is the bluish colored, the dark color that looks like copper glance. If that sample were taken from the cross-cut north from tunnel 31, I would not hardly think it carried any copper glance. That may be copper glance; that is, the only two ores I would mistake it for is this tenorite, which I did not know anything about before

(Testimony of Lloyd G. Gage.)

Mr. Winchell was here; it would either be tenorite or copper glance. Copper glance in the mines which carry sulphide ore, is hardly ever encountered near the surface. Knowing the place where that came from, I would be inclined [424] to think it was tenorite instead of copper glance. I have known where instances of sulphides of copper come up to within twenty-five feet of the surface, though, and maybe closer. They were not protected by a covering of talc any more than any other vein. Tenorite and copper glance both contain the same amount of copper.

(Subscribed by the witness and sworn to before the master, January 16th, 1912.)

**[Testimony of Clinton C. Clark, for Defendants.]**

CLINTON C. CLARK, a witness duly called and sworn on behalf of the defendants, testified as follows:

Direct Examination.

(By Mr. NOLAN.)

The WITNESS.—I am one of the defendants in this case. At the present, I am following mechanical engineering, and I have followed mining engineering and successfully for thirty odd years while in Montana, and a year and a half in Utah since coming west. I have lived in Butte over thirty years. When I came to Butte, I was about 24, between 24 and 25 years of age. Before coming to Butte, I followed the business of mechanical engineering principally; did some prospecting and mining before com-

(Testimony of Clinton C. Clark.)

ing to Butte. I came to Butte from Park City, Utah. After coming to Butte I followed mining principally. I worked at the Mountain View, or, rather, I worked at the Moulton in 1881. Afterwards at the Parrot, latter part of '81 and '82, and then I went to the Coeur d'Alene's excitement in the spring of 1884. I did some mining there; placer mining and quartz mining, prospecting. I then returned to Butte, and became employed by Mr. Larrabee at the Mountain View mine; spent nearly four years there. During the time I was employed there, I did nearly everything; sort of utility man. I mined in the mine, framed the timbers, sharpened the tools. I next leased here for about nine years, at different properties here in Butte. I leased at the West Goldsmith, Goldsmith No. 2 rather, and on the Iduna, and on the Belmont, and on the Soudan out west of town here. In the work of leasing, I certainly had to do with the practical work of mining. I did my work the same as any other man. I also had to do with the supervision of the work. I was foreman of the New State Mining Company's properties in Deer Lodge County, about twelve miles from Deer Lodge, upon what [425] is called Cottonwood; sunk a shaft there and shipped considerable ore. I leased up to 1895 or 1896, and then happened to be unfortunate enough to get into politics. Since getting out of politics in 1900, I have been mining. I ran the Pacific mine east of this property in controversy, sunk a shaft three hundred feet deep there. I mined in Utah before I came to Butte. In these mining oper-

(Testimony of Clinton C. Clark.)

ations that I have carried on, some of it was done in the copper district and some off west in the silver ores. I operated the Pacific mine in 1901 and 1902. That was the only quartz property operated by me in the immediately vicinity of this ground in controversy. But since I ceased operations up at the Pacific, we had a lease on the Sunnyside, up here, from the A. C. M. Company. That was from the beginning of 1903 until the beginning of 1905. The Sunnyside property with reference to the ground in controversy here is northeast; the Sunnyside is north of the High Ore, probably a mile away. I first became interested in the leads on this quartz property, on this ground in 1901. I have made examinations of this ground for the purpose of determining whether there are leads there or not. I have done so several times this fall and winter. I have made repeated examinations of the ground during all these years.

In the case of a vein, walls are the boundaries of a vein; and in the case of a fissure, the walls are the boundaries of the fissure. As the fissure exists, without any reference to its mineralization at all, it would simply be a crack in the earth's crust. That is the only definition I could give for that. It certainly would have its limits; the limits would be called the walls. In the case of the Butte mines, and in the mines I have an acquaintance with, I know of instances where the walls of a fissure are mineralized so as to become ore. That is a common thing here, as far as I know. I know of one particular instance in

(Testimony of Clinton C. Clark.)

the Sunnyside, or rather in the Modoc, four hundred feet west of the original Modoc shaft, between the No. 1 and No. 2 shafts, the ore there was mined out there for a distance of four or five hundred feet, perhaps more, to this point where the fissure departed from the vein. They kept on working beyond that. It is caved there. I don't know how far on the main strike of the vein. I didn't pay any attention to this fissure, but [426] afterwards when I got this lease I was told about this fissure by a former boss there, and I cut the Modoc vein on the three hundred foot level and drifted east on the vein from the cross-cut in the Sunnyside three hundred foot level; we then put up a raise to the old workings in the Modoc and cleaned up the old levels, drifted in under a cave and at that point the vein is interrupted and misplaced from this westerly end of this streak of ore, and immediately began operations. The mineralization commenced in the footwall, ran off in the footwall. The fissures or veins of the mines in Butte are not of uniform width; they are quite irregular; all the ore bodies are in what is termed chutes or chimneys. Some of them might be ten feet; fifty feet or two or three hundred feet long, then there will be a barren place in the vein perhaps for a number of feet, perhaps a hundred feet. Sometimes they hardly have any mineralization whatever in the veins. Regardless of the veins or the ore bodies in the veins, the walls of the fissure are not always a uniform distance apart. They sometimes come together, in the language of the miner, the vein "pinches up," the

(Testimony of Clinton C. Clark.)

walls come almost together so that there is nothing but a seam left, and at other times there might be an interruption of a vein by what is termed a granite horse in mining parlance.

Referring to the ground in controversy here, there are two leads on that ground to my knowledge.

Q. We have been referring to them thus far as the northerly and southerly lead, and we will continue to do so during your examination. When was it that you first ascertained that there were two leads on this ground?

A. When I first went out there to see it.

The WITNESS.—That would be ten years ago, or a little better; eleven years ago this spring. This litigation that has been referred to as the litigation in 1901, I was in that; if my recollection serves me right they were enjoined about the time I got in. I made an examination of this ground in 1901. At that time the Hornet tunnel was run in to its present distance. I do not think it has been extended any since 1901, but there has been a shaft sunk there since by Mr. Mullins. The Hornet Discovery shaft, then, I believe, had [427] some material in the bottom, but down to where the present cross-cut cuts the Hornet shaft, the first cross-cut from the tunnel that went in, the Hornet shaft was down two feet below where the present cross-cut is now, so that you could see the ore in three sides of the shaft. They let me down in a windlass and I examined that.

The Gulf Discovery was down there too at that time. They had this cross-cut connected with the

(Testimony of Clinton C. Clark.)

bottom of the Gulf Discovery, but I didn't have to go down in a windlass; that is, going to the bottom of the Hornet tunnel into the bottom of the Gulf Discovery.

Q. Now, at that time, were there any other shafts or openings on this southerly lead, the Hornet Discovery lead being referred to as the southerly lead?

A. There might have been one or two openings above and partially caved in. They had evidently been made years before I saw them at that time.

Q. And state whether or not there were any openings at that time on the northerly lead.

A. That timbered shaft was there, and the Rabbit Discovery, if my recollection serves me right, was there, and there was others, several holes below there that were partially filled up.

The WITNESS.—That is, those places referred to as shafts Nos. 1 and 2. There was debris in those, and I did not go in them at the time.

Q. Do you know whether the litigation in 1901 had to do with the two leads, or with simply the Hornet Discovery lead?

By Judge BOURQUIN.—Objected to as incompetent, in that the pleadings in the case involving the litigation referred to would be the best evidence.

A. At that time I understood that the litigation involved both, but at that time as I understood it was on the Hornet lead, or what is called the Hornet lead now.

I said I had made recent examinations there. I have also taken people out there to make examina-

(Testimony of Clinton C. Clark.)

tions of those openings. Those different openings on the ground are numbered, I believe. Mr. Barker, I believe, our engineer, did the numbering.

[428] The Pacific mine is very close by this ground in controversy; I do not know just the number of feet; not more than three hundred feet from the end of the Hornet claim there. The Pacific is shown on the map, on Defendants' Exhibit 1. The corner is right there, corner No. 4. Referring to Defendants' Exhibit No. 1, the claim I have reference to as the Pacific is marked there as 2320. That Corner No. 4 is the corner on the Pacific claim, I think.

Q. And if that is the corner of the Pacific and this red marginal line marks the boundaries of the Butte and Boston placer, how close to the ground then would the Pacific come?

A. Right there, the same corner, within a few feet of the Pacific corner.

The WITNESS.—During the time I was working on the Pacific I made openings below the bedrock; quite a number there. We have a statement from Mr. Winchell that there is a mineralization, this green staining of the rock there, for hundreds of acres. That condition did not exist in the Pacific; there are no such conditions there.

Q. What do you say as to whether or not there are hundreds of acres over there, to your knowledge, surrounding this ground in controversy, stained like the rock that you encounter in the cross-cut from the Mullins tunnel to the Hornet Discovery shaft?

(Testimony of Clinton C. Clark.)

A. If there is hundreds of acres there, I never saw it, and no other man.

The WITNESS.—In the Pacific we had a fissure vein there; the course of it was east and west. In the operations there, we encountered sulphide ore, down in the three hundred. At the three hundred, the vein was cut off there by a fault, and the character of that fault is sulphide ores. We employed Mr. Winchell to unravel the mystery which the fault occasioned; he did not do it; we gave Mr. Winchell quite a fee to come there and figure on this fault plane, to know how far we would have to go to drift out of the fault to pick up our vein again. Mr. Winchell failed to give us any such figures. The course of the vein on which we operated in the Pacific was east and west. The pitch of the fault was northwest and southeast, [429] and came in the shaft at two hundred and thirty feet, I think it was. I do not know how thick the fault was that brought about the displacement of this lead. Mr. Winchell failed to give us that. If he had got the thickness of the fault, we would have drifted to the ore body, which we reasonably expected to find by the mineralization of this fault plane. We encountered the lead itself in the Pacific on its strike about seventy-five or eighty feet. In its westerly course, if it continued, it would go through this ground in controversy. This horizontal line shown on the map on the Pacific here running easterly and westerly was one of the leads we encountered there; we had two leads. (The lead is marked "X" on Defendants' Exhibit 1.) The second lead

(Testimony of Clinton C. Clark.)

that we disclosed in the Pacific was north from the shaft. It is not shown on this map. The other lead is about one hundred and eighty feet north of the two hundred foot station; its strike was easterly and westerly. There was no extensive work done on that. It was only uncovered a few feet on the two hundred. That is the only place it was uncovered. It was cut off by a fault coming into the shaft at about two hundred and thirty feet.

The character of the surface ground of the Butte and Boston Placer is largely broken up vein material, quartz float. There is lots of it all over the ground. The wash is not of uniform depth throughout the entire surface. The surface of the upper portion of this ground where the discoveries are is covered with float. The westerly portion of the ground, as to surface mineralization, I suppose is that slip coming down by erosion from the mountains through all these leads. The broken pieces of float upon the ground there are angular. I never saw any ground gravel on that ground. Some of the pieces were copper stained, showing the existence of leads in the near vicinity. Copper stain is a green stain, showing carbonate of copper. There are no ravines or deep gullies upon the surface of this ground, the surface is practically smooth; there are no trees on it. In 1901 there was sagebrush and grass. There would be no trouble in seeing the debris taken from the shafts, which form mounds. Since I became interested in the ground there has been work done upon the ground. There was a shaft sunk by Mr. [430] Mullins, as

(Testimony of Clinton C. Clark.)

he testified. Nearly all the surface tunnels were run by us. That work was intended for representation work and development work as well. I knew that ground in the immediate neighborhood since 1881, when I first came here.

Q. And what, if anything, do you know about any placer mining being carried on in the neighborhood of that ground?

By Judge BOURQUIN.—Objected to as immaterial.

A. None whatever.

The WITNESS.—There has not been any placer mining within a mile of it; in fact, I might add to that also I never knew of any placer mining on the south or east side of Silver Bow Creek. No placer mining work was ever done on the ground in controversy. I never saw any shafts sunk there by Mr. Kemper. There was one pointed out to me specially that he sunk.

Q. And did you yourself carry on any tests there for the purpose of determining whether there was any placer gold there? A. Yes, sir.

Q. And with what results?

By Judge BOURQUIN.—Objected to as immaterial.

A. I could not find the color. We carried water out there from town and had half a dozen experts pan the ground thoroughly in several places.

Q. Well, now, if it has not any value for placer purposes in your judgment, in what does its value consist, if it has value?

(Testimony of Clinton C. Clark.)

By Judge BOURQUIN.—Like objection.

A. Consists in its value for the quartz mining and no other value that I know of.

Q. What do you know of any quartz mines being operated adjacent to this ground?

By Judge BOURQUIN.—Objected to as immaterial.

A. The Pittsmont to the west, the Bullwhacker to the south, and operated for quartz successfully while they ran it. I believe they paid a dividend of ten cents per share while they ran this mine. On the north, the ground is all located up as far as what is called the Butte and Boston No. 7 for quartz, with the exception of the Mayhoe placer.

Q. What do you say as to whether or not in your knowledge any placer operations were carried on on that ground?

By Judge BOURQUIN.—Objected to as immaterial.

A. None whatever on that ground. It was only located for placer with the evident intention of taking the ground away from the people.

[431] By Judge BOURQUIN.—Move to strike out the answer as not responsive and as hearsay presumably.

The WITNESS.—It shows for itself.

I made shipments of pay ore from the Pacific; it went fifteen and five-tenths per cent copper. I operated the Pacific in 1901 and part of 1902. There had not been any work done on the Pacific before that to any great extent.

(Testimony of Clinton C. Clark.)

Q. There is something said here in this case thus far about aplite, and aplite being an enemy to ore, or to copper. Have you in your experience as a miner encountered any aplite?

A. Well, we usually term that quartz porphyry, but Mr. Winchell gave it the term of aplite and this ore that we shipped had, as Mr. Winchell terms it, an aplite base, and he claimed it was not soluble enough to contain copper.

By Judge BOURQUIN.—Move to strike out answer as to statements of Mr. Winchell as hearsay.

The WITNESS.—(Sample produced and marked for identification Defendants' Exhibit 73.) This sample, Exhibit 73, is the material about which I have been talking. That came from the Pacific. I call that quartz porphyry. That same material is shown in several mines; it is shown in the Wild Bill on the Butte Hill; there was just such an outcrop as we have there on the Hornet; also on the Modoc on the Hill. In the Modoc you find it as a vein filling. In the vein filling it is all mineralized. It has been shipped as ore. It might be said that this Winchell aplite has been treated and handled as ore in almost any of the mines. It is not confined to any particular vein or base. Granite is sometimes a vein stone. When it appears, it appears in the lead as changed granite. It is highly mineralized. This material, Defendants' Exhibit 73, is usually called by miners quartz porphyry. I am not a geologist; I have not studied to any extent the crystallization of rocks. I would only be able to tell one rock from another by its ap-

(Testimony of Clinton C. Clark.)

pearance and my experience in getting values out of it.

Q. Now, taking up with you the northerly lead on the ground in controversy, and inviting your attention to shaft No. 21, so designated on this map, what kind of a shaft is that?

[432] A. That is a vertical shaft, about three and a half by five, timbered with six by six timbers, a depth of about one hundred and ten feet.

The WITNESS.—The shaft is down about six or seven feet below bedrock, and is all in vein material. By vein material, I would say quartz porphyry in the vein, talc and some granite porphyry in the vein, what we term granite porphyry, of a very soft nature in that place. It is a very common occurrence to find that kind of material in the veins of the mines of Butte. There are great bodies of talc in a vein, and it is mineralized. It is overlying sulphide ores. I would judge, from the presence of the talc there, that when we get to water level we would have good ore there. There is not enough of this vein exposed there to tell its strike or its dip. It is not cross-cut. We do not know the width of it, therefore we could not tell right at that point about its dip, but in conjunction with the vein as shown in the other shafts further up the hill at intervals, we can tell its strike, and also by the seams that is running across the shaft. That shaft is down quite a depth in the wash; it is down over a hundred feet. I was interested in this ground at the time we commenced to sink that shaft right from the surface.

(Testimony of Clinton C. Clark.)

Q. How was it that you picked upon that particular spot?

A. We went up along the vein and sighted the numerous shafts down there and put up some stakes that with the lay of the ground would about catch the vein. If it didn't, we intended to cross-cut and cut the vein down in that portion of the ground.

The WITNESS.—I do not think there are any walls exposed there in the shaft. The vein is so wide there. The vein is so much wider than the shaft is the reason.

I cannot say just when tunnel No. 30 was run. It has been during the time of the representation work. There is a cross-cut running to the south; I do not think it is shown on the map; it was probably ten feet long from the side of the tunnel south. There is a lead in that cross-cut. It is all vein material; the cross-cut and the tunnel at that point is all vein material. By the lay of the formation, we could determine the strike reasonably well, almost any experienced miner could; I would say the strike is an easterly [433] and westerly direction. I could not see the walls; I am unable to say if there were any walls there on account of the width of the vein. I don't think the true wall is discovered there yet in that place. The vein matter there does not show much discoloration, other than iron stain. There is quartz and quartz porphyry there, and it is part of the vein that is projected down the hill from that shaft. There is some talc there. You are liable to encounter talc on either of the walls, either the foot

(Testimony of Clinton C. Clark.)

or the hanging-wall, and sometimes there is talc in the middle of the veins—a talc seam. Talc, as we term it, is supposed to be crushed quartz, ground up fine with the rest of the rock; it usually shows movement in a vein; it shows movement on account of its crushed appearance and smooth surface, what we term movement makes those smooth surfaces. I should judge that this cross-cut from tunnel 30 is about seventy-five or eighty feet east of shaft No. 21.

Referring to shaft No. 1, it is in the neighborhood of four or five hundred feet east of the cross-cut. There are no openings in the intervening space marking the course of the lead that I recollect. Shaft No. 1 shows a granite wall there on the north, a little granite there. I would not claim that it is the permanent wall. It is all in vein material there; some quartz porphyry in there. Probably six or seven feet of the shaft is in bedrock. I could not say, but I think the shaft is a little deeper than it was in 1900 or 1901, probably a couple of feet. Nearly all the shaft is in vein matter, right up to the wash. The wash lays right on top of the bedrock, from there up to the surface. I would call the rock that appears in the shaft quartz porphyry, some granite, some porphyritic granite, vein matter there. It is iron stained vein material. Outside of the iron I have no knowledge of it carrying any values. The stratification of the seams in there, the successive seams of quartz porphyry and porphyritic granite, shows an easterly and westerly strike to the vein. There seems to be a sort of slip there that might be termed

(Testimony of Clinton C. Clark.)

a wall, and yet might not be the permanent wall. Off to the north, there is a slight slip.

Shaft No. 2 is possibly sixty or seventy feet east of shaft No. 1. Olivia Discovery, shown on the map, is a shaft that is caved in [434] there. I do not think it is in a condition so you could get in it. That is between shafts No. 1 and 2. In shaft No. 2 the conditions were much the same as in No. 1; there was a lead there of about the same material as in No. 1. I found evidence of stratification there. That signified an east and west strike to the vein. I do not think the wall shows very plainly in shaft No. 2. There are some iron streaks there that stand almost vertical of the same material as in shaft No. 1. The seams have an easterly and westerly strike, which would determine the strike of the vein. The dip is almost vertical, with an inclination to the north.

I did some work myself in tunnel 31, about a year ago in December; Mr. Mason and I run that cross-cut north and cut that first streak of ore in our representation work last year. We struck a body of ore there that is visible in the neighborhood of about ten feet; two nice streaks of ore; the first streak Mason and I cut about five feet north of tunnel 31. The most southerly streak would be about eighteen inches in width at the bottom—getting wider as it goes down. The most northerly streak measures about three and a half feet in the bottom, pretty nice ore there. It is all one vein with vein material in between the streaks. The mineralization of the vein is of a lower grade than the streaks. The streaks

(Testimony of Clinton C. Clark.)

are pretty high grade. I should judge they would go as good as ten per cent or better of copper. The other material probably would not go over one or two per cent. The whole body together might go nine per cent copper; there would perhaps have to be some little sorting. Twenty-five feet in the cross-cut north of the tunnel, you find the first streak of ore. There has been some work done in that cross-cut extending it to the north within a week or so. This three and a half foot streak of ore has been uncovered there this fall; this last week or so. I do not think this ore body that is uncovered in the cross-cut had any walls. The granite shows there, but it is changed, it is not a granite wall. If you will notice right in the face of the cross-cut—and if you cut into that I think you would get into another seam of ore. I say the values do not decrease as you go down; on the contrary I say the values increase [435] as you go down. That is evidenced there to any miner who goes and looks at it. The strike of the ore body as exposed in that cross-cut is easterly and westerly. If there is any deviation, it will incline a little to the northwest, I would think. That is not the only place in that tunnel or in that working where there is an ore body uncovered. Farther in the tunnel from that cross-cut, about forty feet, you cut a vein again with the tunnel on its way in. It turns again to the northeast there; you see a part of the ore has been taken down there when the lead was cut there, and taken out, and a portion of the ore is left standing; that is on the north side of the tunnel as you go in. On the

(Testimony of Clinton C. Clark.)

opposite side of the tunnel seems to be this quartz porphyry right at that point just as you strike the lead with the main tunnel; the material on both sides is a portion of the vein; the vein in my judgment is wider than the tunnel at that point. Proceeding east from that point, the ore continues to be visible up to the face of the tunnel; possibly a distance of a hundred feet. There is a wall shows there in the face of the tunnel; I would call it the hanging-wall, as shown in the tunnel there; you might possibly cross-cut and get another stringer of ore, but I could call it the wall as it exists there now. Such occurrences are common in mining. It is a difficult matter at times to determine the walls, the genuine walls of a vein, on account of the mineralization of the rock. When the rock is mineralized, you find the walls where the rock ceases to be mineralized and becomes hard, and a little glassy granite. The dip of this lead in the tunnel there is slightly to the north. The wash at that point is approximately twenty feet deep. I next encountered this lead on its journey eastward in the Rabbit shaft. I would certainly consider that from the appearance of the lead in that tunnel it would continue its strike. I would say that lead does not terminate in the cross-cut going west; and it does not terminate, in the light of my experience, at the face of the tunnel, but still continues east. I know the lead does not terminate at its depth right at the bottom of the tunnel because there is good ore right in the bottom, if you will dig into it—rich ore. I know it does not terminate in depth there by reason

(Testimony of Clinton C. Clark.)

of my past experience in following [436] veins down and sinking on veins.

The Rabbit Discovery is eight, ten or twelve feet deep. When I visited it there was a nice streak of ore in the bottom; in fact the bottom of the shaft was all in vein material. I could tell from an eye examination that it contained copper; it is colored green. The staining is mixed through the entire material. I also went into shaft No. 9, the timbered shaft. I don't know when the timbering was done on that shaft, but it was timbered at the time I was out there. A lead is disclosed in that shaft, about twenty-five feet down, on the north side of the shaft; there is a nice showing there of copper stains—vein material. I do not know of any ramification in that shaft in the way of cross-cuts, with the exception there is a cave under that cross-cut where the vein shows, but it does not show the green stained ore, not when I was in it. It is kind of a vein material, but the green portion of the ore seems to have a little inclination to pitch north, and be north of that cave. I did not make any examination of the ground farther east along that lead. It might be a thousand feet, or such a matter, from the Rabbit Discovery, along this lead to shaft No. 21. This vein I have been telling about in all of those openings is one and the same vein. There is no doubt in my mind about it.

When I first saw the Hornet Discovery, it was down perhaps twenty-five feet. It was not cleaned out when I saw it first, clear to the bottom. I told

(Testimony of Clinton C. Clark.)

you about Mr. Mullins sinking a shaft there; I say the northerly and southerly boundaries of that shaft do not constitute the walls of that lead running down there, because the material south of the shaft and in the immediate vicinity is mineralized; because it has copper in it. In some places it is richer than in others. There are successive streaks of ore for twenty-five or thirty feet. South of that hanging-wall, you encounter ore. It is commercial ore. Possibly thirty feet of the ore body south of the southerly boundary of that shaft could be shipped as ore.

Q. What is there in the southerly boundary of that Mullins' shaft, if anything, to suggest to you that that is the hanging-wall of that lead?

A. They sunk a shaft on a seam of ore that was exposed in the [437] bottom of the tunnel and the ore cleaned off to that seam and made it a wall of the shaft all the way down as far as I went down the shaft, but in different places down where I was, there was drill holes and cracks in that wall that showed mineralization as far as I could see into it.

Q. Do you know whether or not at the time the shaft was sunk, there was any dispute as to whether there was a lead uncovered in the Hornet Discovery?

By Judge BOURQUIN.—Objected to as presumably calling for hearsay.

A. Yes, there certainly was. We were enjoined from doing any work there.

Q. Do you know, under the circumstances then existing, whether there would be any purpose to be subserved in making that southern boundary of the shaft

(Testimony of Clinton C. Clark.)

the hanging-wall of the lead?

By Judge BOURQUIN.—Objected to as involving an argument, immaterial and incompetent.

A. Yes, sir.

The WITNESS.—There is a cross-cut extending from the tunnel to the discovery shaft; that cross-cut would be south of this hanging-wall in the shaft. That cross-cut, throughout its entire distance, is a portion of that lead. The mineralization does not decrease as you go down; on the contrary it increases. I found ore that will assay in the Hornet Discovery shaft. You can see the ore sticking in the sides of the shaft, rock in place there, after you leave the wash. You do not find rock like that over in that territory and in any portion out there, within the radius of say a mile, or three or four hundred acres. You do not find it in any portion of that territory only in veins, east and west veins there. I did not see any fault there. This fault business is a bugaboo here. I do not see any fault. I did not see anything of what you call a fault in the northerly lead other than the little seams and cross-seams you will encounter in veins here; if the vein material is cut up by so-called faults, the miner's remedy is to pick through it and cut his ore body again beyond. Yes, I encountered a fault in the Pacific. There is considerable difference between these faults, and [438] the fault you are referring to here. The Pacific fault was a large fault. We did not cut through it; we did not have the money; we did not know how far we would have to go. Taking these faults that are

(Testimony of Clinton C. Clark.)

referred to in this testimony as faults affecting those leads here, I should say there is little seams in there that they term faults—I would not consider them faults unless they misplaced the vein,—the mineralization there is due to the vein and not to the fault. If it was only an inch or two in thickness, I would not call it a fault.

That winze that Mr. Mullins refused to tell you about is in the bottom of the Hornet tunnel, just at the mouth of the first cross-cut, the upper cross-cut. It was covered until recently. I suppose it was run when Mullins was doing the work. I have been down in that winze. It is almost practically on a line with the shaft Mullins sunk further to the east, and would represent the strike that is represented in the tunnel to the east.

The Hornet Discovery and the workings adjacent to it show copper, and this copper ore exists in the Hornet Discovery shaft. The ore extends north from the Hornet Discovery shaft through that cross-cut to the Hornet tunnel. I presume the lead is between twenty-five and thirty feet wide there. The ore that exists in the Hornet Discovery shaft is commercial ore, most of it. You encounter this ore just about at bedrock; there are streaks of ore there mixed in the vein material. It extends continually from there to the bottom of the shaft. It is in the bottom of the shaft; all the formation in the bottom of the shaft is mineralized,—vein. All this rock that is there is stained material, and is lead matter. Proceeding in a westerly course from the Hornet Dis-

(Testimony of Clinton C. Clark.)

covery, and without leaving the Hornet workings, in the tunnel west of the cross-cut and on the south side of the tunnel this lead matter is discernible there. I think some of the ore has been stoped out east of the Hornet shaft; there is an old stope there. I think the lead is there still, off to the south of that. There is vein material in this drift extending westerly from the bottom of the Hornet Discovery shaft, as shown there. It is about the same thing as you encounter [439] in the Hornet Discovery shaft, perhaps not as good grade material, maybe a little lower grade. It looks to the south as though it is not so highly mineralized as it is in the other three sides of the shaft. You might possibly call that a wall on the south side of the shaft; if it is a wall, in my judgment it is the hanging-wall. The lead might be the footwall in the Mullins shaft, in the north wall of the shaft. The next tunnel west of there is No. 37. It was not quite all cleaned out when I was in there; I have not been in there recently. I could see some stained rock there, one or two bunches of high grade ore in the vein granite there. They were still working there cleaning it out the last time I was in there. I have not been in there since it was cleaned out.

Next westerly there is tunnel 36. I have made an examination of the material in there; the vein is there in my estimation. This oxidized quartz shows there. It is in place, lays in an easterly and westerly direction; it dips to the south. At the cross-cut almost at the end of the tunnel, there is about twenty

(Testimony of Clinton C. Clark.)

feet exposed. The first cross-cut running to the north, as shown on the map; the vein appears in that. The tunnel itself is run partly in the vein and partly in the granite. The right-hand side, or south side of the tunnel, is in decomposed granite. A wall might be shown there in depth; it would be the hanging-wall on the south side of the tunnel. The strike of the lead there is east and west; its dip is south. There is a sort of cross-cut to the south of the first cross-cut there, which is all in decomposed granite. Assuming that the wall to the north in the cross-cut from tunnel 36 is the true footwall, the lead would possibly be twenty-five feet wide there.

The next tunnel westerly is No. 35. That tunnel runs into the hill in an easterly direction from the mouth,—strikes bedrock in about one hundred and ten feet. There is a short cross-cut there which exposes a lead in vein material,—runs north from the tunnel, and then this vein material right in the face of the tunnel; it is only a couple of feet to bedrock there. There is a sufficient disclosure there to give the strike of the lead; the strike is an easterly and westerly direction; it dips to the south.

[440] The next opening to the west is shaft No. 19; that is about three and a half by five feet, timbered shaft, with ladders to the bottom, about eighty-seven or ninety feet deep. Probably five or six feet of that shaft is in bedrock. It is right in the vein there talc and quartz mixed with vein material. The walls are not disclosed. It is all vein material. I think the lead is the continuation of the same vein

(Testimony of Clinton C. Clark.)

that is in tunnel 35 and 36. The approximate distance from the Mullins tunnel 34 to shaft 19 is six hundred feet. The lead disclosed in these openings we have been talking about is one and the same lead. The lead shown in shaft No. 19 does not end there; it keeps on its course there in a southwesterly direction. The lead shown in the face of the Mullins tunnel does not end there; the face of the tunnel is all vein material, which shows that the vein continues on. In the testimony I gave yesterday, I roughly estimated it was a thousand feet from shaft 21 to shaft 1. I was mistaken in that; I would think the distance would be five hundred and fifty or six hundred feet.

Q. Now, going back a moment to shaft No. 1, on the northerly lead, I will ask you whether or not the mineral indications are such in that lead disclosed in that shaft as to justify you as a reasonable mining man to locate the ground and expend your money in the development of the property?

By Judge BOURQUIN.—Objected to as immaterial.

A. Yes, sir.

Q. I will ask you the same question as to conditions existing in shaft No. 2?

By Judge BOURQUIN.—Like objection.

A. Yes, the same conditions.

Q. And also as to the conditions existing in shaft No. 9?

By Judge BOURQUIN.—Like objection.

A. Yes, sir, same thing.

(Testimony of Clinton C. Clark.)

Q. And also as to the conditions existing in the Hornet discovery shaft?

By Judge BOURQUIN.—Like objection.

A. Yes, sir.

Cross-examination.

(By Judge BOURQUIN.)

The WITNESS.—My profession is that of mechanical engineer; I learned it from practical experience. I had acquired it before I came to Butte. I went to work first at the Moulton, followed mechanical engineering; from there I went to the Parrot. I followed the same profession there. If I remember right, I went from there to the Silver Bow Mill and worked in the same line. From there I went to the Old Ben Smelter as mechanical engineer. From there I think I went to work for the Lexington Company in the mine as [441] mechanical engineer. Shortly after I left the Lexington, I quit my profession as mechanical engineer and went into actual mining. I went to the Coeur d'Alene in the stampede in 1884; I stayed there until July; I went in February; I went placer mining and quartz mining there. I was working for myself there at the time, prospecting. When I came back I went to the Mountain View. I worked there very nearly four years. I was doing a little of everything there, worked in the mine, framed timbers, did nearly everything; sharpened tools and ran the hoist a part of the time, and I was mechanical engineer. They were developing the mine at that time. We did some shaft sinking at the

(Testimony of Clinton C. Clark.)

time. We were also running drifts and levels on the ore bodies. I did not work as actual miner with a hammer and drill at the Mountain View. After that I leased for about nine years. The Goldsmith No. 2 was one of them. That is in the Silver belt. Then I went to the Iduna, but in the interval I was down in Deer Lodge for a couple of years; worked there at the New State. I was foreman of the property there; that was a silver property. I sunk the shaft three hundred feet. We shipped some ore until the slump in silver came, and then it was abandoned. It was sold for taxes. I had an interest in the property. I came back to Butte some time in 1892 or '3, and went to leasing again at the Iduna. The Iduna is down just east of the Belmont, between the Belmont and the East Butte properties. I think it is a property located over a placer patent. We operated a shaft there. I was one of the leasers and I did practically anything I could do; I ran the engine part of the time and did other work; mechanical engineering as far as required; sharpened tools. I also leased at the Belmont; my labors there were about the same; also at the Soudan. That is west of town in the Silver district; belonged to Mr. Murray. I never worked for any of the companies here for days' pay, because I could get more money working at mechanical engineering. In 1900 I worked on the Pacific; in 1901 I had charge there. We sunk a shaft three hundred and twenty feet; we started it from the surface. We commenced there some time in the spring of

(Testimony of Clinton C. Clark.)

1901. When we first started, I was elected president of the company, and I went out and [442] helped get things in shape, and along in September I took active management of it. I continued there until the 24th day of June, 1902. We ran out of money and the property closed down. We were pumping too much water; we were into the fault, as I told you, on the three hundred foot level. The machinery was pulled off. There has been some leasing on the property at intervals since. We lost the vein at the fault about at the two hundred and thirty. We were sinking a vertical shaft, and did not follow the vein down. At the two hundred and thirty foot we struck the fault. The vein that we were sinking for was north of the shaft; it was dipping south. We expected to cut it in the shaft at the 230, and we thought we had the vein. The fault we found was pitching north. We sunk the shaft from there down to the three hundred and twenty foot in the same fault material; this fault dipped to the north, northwest. The fault had sort of an east and west strike there. It was running practically the same course as the vein we were looking for. We did not know where our vein lay after we struck the fault; that was what we employed Mr. Winchell for, and he never gave us any figures or data to go by. He said he would. *We the* vein north of the shaft was exposed under the engine-house; there was a shaft there that was filled in afterwards, grading. It was down about thirty feet. There was quartz porphyry in there and two

(Testimony of Clinton C. Clark.)

or three streaks of copper in it. I could not say that we had the walls; it was what I call vein material. We cross-cut on the fault on the three hundred to the north. We did not cut through the fault. We also cross-cut southeast on the three hundred; we did not go through the fault. We were practically cross-cutting north and south. The material in the fault there was what Mr. Winchell calls aplite. It was broken up in places, with rich ore in seams. The ore was some sulphide and some native copper. There was no oxide in it. We shipped some ore from the Pacific from the south lead. The south lead was possibly one hundred and twenty-five feet or such a matter south of the main shaft. We had a little shaft on the south there. That shaft is about seventy-five feet deep on the vein. The vein had an easterly and westerly course and pitched slightly to the north. The north vein pitched to the south. I think the south vein, one place at the shaft, is ten or [443] twelve feet wide. I cannot say that we had the north wall at all there; we thought we had the south wall; we thought we had what was the footwall. The material in that vein is quartz porphyry. It was soft; the ore in places was quite soft. It had rich streaks of copper ore throughout it. The copper ore was oxide at that depth; some red oxide. I do not know of any chrysocolla down that deep; there was some in the surface of that vein.

This exhibit 73 is out of the dump; that would be sorted out of the ore; we sorted the ore out of that.

(Testimony of Clinton C. Clark.)

The ore was the same material as that, only richer. I call Defendants' Exhibit 73 quartz porphyry; wherever I have been speaking of quartz porphyry I have reference to material very similar to that exhibit; but maybe a brown stain, that is white apparently. That came from the south vein. We shipped a small shipment from there, two or four tons. We had of course in that shipment picked out what we could find of the red oxide and cuprite and put it in the shipment. I don't think there is anything but the stain in exhibit 73. Our south vein in the Pacific was very similar to this exhibit 73, except on the surface. We were not troubled with much water in the south shaft. We anticipated that the deeper shaft to the north would drain it, but there was a little water laid there for some time after we ceased operations. There was nothing on the surface to indicate the limits of this fault that came into our shaft; we did not find its limits at all in the work that we did; we were still in the fault in all the workings in the deep shaft when we ceased; our money had given out.

Q. Well, why do you conclude that that was a fault and not a vein itself that you were sinking for?

A. Because Mr. Winchell told us it was a fault. Mr. Connolly employed Mr. Winchell to come out there and project the distance of that fault, and we would drift through it. I didn't know anything about aplite at that time, or never had heard of it.

The WITNESS.—If Mr. Winchell made any written report to us, I never saw it. I was there sev-

(Testimony of Clinton C. Clark.)

eral times when Mr. Winchell was out examining the property.

We are informed that the workings of the Pittsmont are forty [444] feet west of the ground in controversy. I have not been down the Pittsmont; the shaft scales on the map just five hundred feet west of our end line. The Bullwhacker workings on the south are eighty or a hundred feet from the ground in controversy. The Mayougha placer is north of west of this ground, I think. West of the ground in controversy there are patented placer claims, but they never worked them for gold.

Mr. Connolly said he paid Mr. Winchell to examine the Pacific for us, and I was there when he was there; I don't suppose he came out there for glory. That is the information I have. I was president of the company. Mr. Connolly was representing Mr. Krueger, who was the financial end of the company. I concede that mining men do go and look at other properties for their own information, even though not employed; but in this particular instance I know Mr. Winchell was employed. I cannot say that I have any returns from the shipment from the Pacific. I might have over at home among a lot of papers that I have. The Butte and Boston clerk might be subpoenaed with the books; that would show that the ore was shipped to their smelter.

I sunk shaft number 21 during the summer; last summer. We commenced some time in June or July. We determined the site for that shaft by the openings and the strike of the vein in the other

(Testimony of Clinton C. Clark.)

holes up there. We punched a hole through that streak of ore in the cross-cut in tunnel 31, and we got a point there and a point up at the discovery shaft of the Rabbit, and also a point where that hole is in tunnel 30, cave in at the mouth of the cross-cut south from the tunnel. We lined up the Rabbit discovery, a hole over the north cross-cut of tunnel 31, and a hole over a south cross-cut near the face of tunnel 30, and from that determined where to sink shaft 21. It is down hill all the way from the face of tunnel 30 to shaft 21. Our vein stands almost vertical, but has a slight dip to the north in places. We sunk a hundred and ten feet before we struck what I say is the vein. The material in the bottom of shaft 21 is quartz, talc and vein granite; the whole bottom of the shaft is in vein material. You might add quartz porphyry and granite [445] porphyry; it is all mixed up there, showing it is on top of a big wide vein. I cannot say that we have found the limits of that vein in our shaft 21. We might in the Rabbit Discovery, and might possibly in shaft 21. As I said in my direct testimony, the north wall was standing almost vertical there. If we establish the fact that a known vein existed here, we would be entitled to twenty-five feet on each side of the vein. Twenty-five feet south of the footwall and twenty-five feet south of the hanging-wall. At the time we did this work last summer, we didn't have time to cross-cut to determine the walls. We were pushed last summer. We wanted to establish the vein and that was sufficient

(Testimony of Clinton C. Clark.)

for the time being. I think I can determine it is in a vein without having discovered the walls, because it is in vein material. The difference between talc and clay is that clay is not usually mineralized, talc is; that is the only practical difference that I know of. The stratification disclosed in shaft 21 would show the strike of the vein; they run generally in one direction; their course is east and west. I could not determine the dip in that shaft without further development. When we struck the bedrock we sunk into it about six feet; that shaft immediately got into the vein.

From there I went to tunnel 30; it is a tunnel almost directly east of shaft 21. That was run in the days we were representing some of the leads. I do not know the exact year the tunnel was run; me and my associates did the work. It did not run in very far before we struck bedrock. I do not know the exact distance. The material in which that tunnel is excavated is granite and quartz porphyry. We found vein material in the cross-cut south from the tunnel; it is all in vein material. I have no information as to what aplite is other than what I have heard from Mr. Winchell. That material in the south cross-cut from tunnel 30 is not what I have been told is aplite. It is quartz porphyry and quartz. You can get a piece of quartz out there in almost pure crystallized quartz. What we call aplite and what I call quartz porphyry might be one and the same thing. I could not say that the vein in this south cross-cut has much of a dip there. As

(Testimony of Clinton C. Clark.)

you go north from that cross-cut and [446] into the tunnel, there is a wall showing there. I could not say whether it is the wall or not. It is what you call aplite, blocky stuff on the north there. There is quite a smooth seam along that blocky stuff for quite a distance exposed. I did not observe there any north and south fault. A fault, in my judgment, is practically a displacement of a vein, where it breaks a vein off; where the vein has been shifted from its true course. I have noticed nothing of that sort in tunnel 30. I observed no copper in tunnel 30; the value seems to have leached out there with the water. I saw nothing but an iron staining.

Shaft No. 1 is about sixteen feet deep, I guess. I was last in it yesterday. I think it has been deepened a little since we sunk it. That is possibly seven or eight feet in bedrock. In that shaft we again found vein material; granite porphyry and quartz porphyry; it was all what you might term vein material in that shaft. I did not observe any evidence of copper there, only the stain in the rock, —iron-stained rock. Usually at the apex of these large veins values recede with the water. I do not think there was any evidence of walls of any vein in that shaft. I could not say as to the south boundary at all; but it might be possible that a wall would be found a short distance to the north. The stratification in this shaft gave an easterly and westerly course. The dip there was slightly to the

(Testimony of Clinton C. Clark.)

north. The material was nearly vertical in appearance.

I went down shaft No. 2; I was down it yesterday; it is about twelve or fourteen feet deep; it is about the same distance in the bedrock as shaft No. 1; four or six feet. The material there constituting the bottom of the shaft was quartz porphyry, some iron streaks in it. There were a couple of streaks of iron in there, iron stained quartz. They were four or six inches wide. The walls of the vein material there were much the same as in No. 1.

I was in tunnel 31 one day with Mr. Barker when he had an instrument; he will give you the strike of that vein; he is our engineer and is to testify later.

It was twenty-five feet before we found ore in that cross-cut. [447] There is quartz porphyry in there to the south of it. I would not wonder but what it is part of the vein. I did not see any country rock there. What I call country rock is hard, blue, glassy granite. I never heard of the quartz porphyry being country rock in the Butte district, only in places where there is big bodies of it.

To the south of the first streak of ore in the north cross-cut from tunnel 31 might be termed vein matter. It extends to the south wall of that tunnel as you go in there. Going on in the south cross-cut opposite the north cross-cut it is granite in there. I think the south wall of the tunnel as you go in there is the south wall. What is termed the north wall is exposed there, but right in the bottom of the cross-cut there is ore coming in again; that is the

(Testimony of Clinton C. Clark.)

north cross-cut. As you go in the tunnel, the ore next appears on the north side of the tunnel, about forty feet from this cross-cut. The vein is somewhat disturbed in the progress of that tunnel as you go towards the face; I don't know whether you would call it a fault or not. The granite is all mixed; the vein granite is all mixed with those rich streaks of ore shot through it. That is on the north side of the tunnel as you get next to the face of the tunnel. About twenty-five or thirty feet beyond where the ore first appears in the tunnel,—beyond the north cross-cut,—I did not observe any evidence of faulting. There are little cross seams there; I would not call them faults, because the vein continues on its regular course. I could not say that there is a fault at the face of the tunnel. I saw what I termed the wall of the vein there. I think that might perhaps be termed the north wall of the vein. It had an easterly and westerly course there. It has the same course that the vein appears to me to have in the north cross-cut. I think that would be considered the north wall in the face of the tunnel. The granite lies on the north side of it. I did not observe any evidence of a south wall in or near the face of the tunnel. I helped to run the little cross-cut south from the face. It is in vein material there almost for the full length. It is porphyry granite, vein granite, changed granite. This hanging-wall in the face of tunnel 31 does not extend to the south side of the tunnel; about fifteen feet from the face of the tunnel, west of [448] the

(Testimony of Clinton C. Clark.)

little cross-cut of a foot or two showing that cut off, it goes into the country there. That is on the north side. It appears in the tunnel to the east at the face; cuts the face about the middle. I would give it there an easterly and westerly course; little bit northwest perhaps. The strike in the north cross-cut is easterly and westerly. It might be considered a little north of west in its progress west. I have Mr. Barker's word for that; he was in there with the instrument and put it on the wall. He was with me.

I was in the Rabbit Discovery shaft. I do not know when the shaft was excavated there only from hearsay. I wasn't there when it was excavated. There is ore right in the bottom at the north side; there is a nice streak of ore, and all the bottom seemed to be, when I was there, in vein material. The north side of the shaft was the richest streak of ore. It did not run up the sides very high, because it was just making there; the formation was soft. It was disappearing on its course downward. All the bottom of the shaft was in vein material. There is also a little hole in the west side of the shaft; there is vein material in there, but it did not look quite so good. I did not bring any samples of ore I saw in the north side of the shaft. That ore had the characteristics of copper ore; just green stained ore. I think the streak was about a foot thick where I saw it exposed there. That streak seemed to incline a little bit to the north there. It is right at the bottom of the shaft; probably a foot or so from

(Testimony of Clinton C. Clark.)

the bottom; it shows in the bottom of the shaft, and about a foot above the bottom. It is really a part of the same material that fills the bottom of the shaft; there is no division between it. The material in the Rabbit shaft looks as though it had the same strike as shown in the tunnel. The rabbit shaft is possibly twelve feet deep.

I then went to the timbered shaft—shaft No. 9 on Defendants' Exhibit 1; I could not say how deep it is; I only went down twenty-five or thirty feet. I have no personal knowledge when the shaft was sunk. I saw the first evidence of vein or vein material in shaft No. 9 down about twenty-five feet. The shaft at the side seemed to be vein material; and there is a nice showing there in the [449] cross-cut, about four feet from the shaft; it was copper stained rock; it seemed to be in the form of a vein. I could not say whether the true wall is shown at that point or not. It seemed to be vein granite on the north side clear to the end of the cross-cut. I could not see anything on the south side of the shaft, it was timbered up. The shaft is east and west, and the cross-cut runs north from the shaft, and I could see this material in the east side of the cross-cut on the north side of the shaft.

Q. Now, what is your reason for the conclusion that you have reached that all these openings mentioned, shaft 21, tunnel 30, shafts 1 and 2, tunnel 31, the Rabbit and the timbered shaft are all on one vein and on the same vein?

(Testimony of Clinton C. Clark.)

A. Why, I do not see any other vein there; that is the reason.

The WITNESS.—I have not seen any faults there; the vein continued on the same general strike. I never saw anything outside of the big fault in the Pacific that I would term a fault in this ground. I have known veins to be parallel to each other in the Butte district, but not that close; my experience would limit them to twenty-five or thirty feet. I do not think the line I have drawn would deviate more than twenty-five or thirty feet through those points on the map, Exhibit 1. I first became acquainted with the ground in controversy in 1901; that was when I acquired an interest. The Hornet shaft was already sunk at that time, but it was not cleaned out to the bottom, so I understood. It was cleaned out into bedrock four or five feet. The Gulf Discovery had been sunk. The Hornet tunnel had been run. There was a cross-cut already run from the Gulf Discovery to the Hornet tunnel, but there was no cross-cut from the Gulf shaft to the Hornet shaft at that time. We run the cross-cut some time during the hearing in the State District Court in 1901. I think the Hornet tunnel is extended the same now as it was then. I do not think the tunnel has been run any since. Mason had already completed it before I became interested in the ground; they were enjoined, I believe, at that time. The Mullins shaft had not been sunk. Yes, Mason had extracted the ore along the course of the tunnel to its face. My understanding was he had shipped ore from the cross-cut

(Testimony of Clinton C. Olark.)

as well as the tunnel, the cross-cut from the [450] tunnel to the Gulf Discovery. I think perhaps he had stoped from the tunnel in one or two little places there. I think he had scooped out a little ore below the tunnel before you get into the Hornet cross-cut. I had sunk no winze that I saw. I only know the quantity of ore shipped by him from hearsay. I have been down the Mullins shaft about fifty feet; that was shortly after it was sunk, and during the time we were working the Pacific. I only made explorations in the walls of the Mullins shaft of what I saw there. There had been several drill holes there. I ran a scraper through the bottom of the drill holes and pulled up good ore; what I considered good ore. I mean drill holes of the ordinary miner's hand-drill. There had been none drilled in the north wall that I saw. The north wall of the Mullins shaft might be termed a wall there. That to the south presented a wall of ore; that is one seam of ore after another. Going south in the Gulf cross-cut, you might term them walls, until it gets solidified and down deep enough; I do not know that there are any other now, but they would be walls to every streak of ore you would get. I did not see any faulting in the vein in the Mullins shaft; it keeps the same general strike. Perhaps if the vein was shifted and interrupted to any extent it would be a fault; it might still have its same course and yet the walls might be irregular to a certain extent. The material from the Hornet tunnel from the Gulf cross-cut, outside of the overlying wash, is porphyritic granite, changed granite, miner-

(Testimony of Clinton C. Clark.)

alized. You can see the texture and structure of the granite in it; it shows that it is changed granite; perhaps changed by the green solutions that have penetrated it; and in addition to that you find little kidneys and streaks of cuprite and chrysocolla, you will find them in the vein there in its formative state; it is just beginning to form there under the soil; these little streaks all denote an easterly and westerly course there; up in the soft material they might lay at all angles. I just mentioned that the vein was in its formative state there. The same thing exists from the Gulf Discovery shaft through the upper cross-cut into the Hornet Discovery shaft. There is no aplite at all in that cross-cut from the Hornet tunnel to the Hornet Discovery. There [451] might be some quartz porphyry there; I would not term it aplite; I do not think anybody would term that aplite. The material is about the same from the Gulf to the Hornet Discovery shaft as it is from the Gulf to the Hornet tunnel. You see the evidences of mineral on three sides of the Hornet shaft; the northerly, westerly and southerly sides. It has less mineralization on the south side; don't seem to be much of any at all. There is considerably less of this green copper mineralization in the south side of the shaft. I don't think there is a good deal of the old filling that has been left clinging to the south side of the shaft in the process of cleaning it out; it has been pretty well scraped off. You find the same general material in the lower cross-cut in the bottom of the Hornet shaft, northerly to the Hornet tunnel.

(Testimony of Clinton C. Clark.)

It changed a little bit to a more solid appearance, that is all; the granite there is more tight. I noticed red oxide in the lower cross-cut; it is in spots throughout the granite; I would not term it kidneys there; there is some red oxide there. It is disseminated through the granite there. I don't know how little you would call it; I did not take a sample of it. There are streaks and strikes all through it there. I have repeatedly said that I have not seen any faults there. In the bottom of the cross-cut, where it approaches the tunnel, I saw an opening in the granite showing quite a good deal of mineral, with a northerly and southerly course, but I would not term it a fault. If it pursued its course, it would not enter the Hornet shaft. I did not go in the southwest drift from the bottom of the Hornet. I just looked in there and did not make a thorough examination of it. I do not know what material is in there. The south wall of the Hornet Discovery shaft is devoid of mineral; that might be the making of the hanging-wall; after you dig into it it might change to a heavier mineralization; it is a kind of granite; I did not see any definite boundary between it and the material lying north; I did not see any talc seam in there.

I have not been in tunnel 37 since it has been cleaned out. I just looked in there, in the cross-cut north, under the Hornet tunnel. My impression is that when I looked in there I could see two or three bunches of vein granite in there, but I did not go into it [452] to examine it. I am not positive about it.

(Testimony of Clinton C. Clark.)

Tunnel 36 might be twenty-five feet in the bedrock there. I examined tunnel 36 pretty thoroughly. I helped to run that north cross-cut from nearly the face of that tunnel. That tunnel has been in quite awhile, but last winter Mr. Mason and I in doing the representing run that north cross-cut. Tunnel 36 is in brown stained quartz. There is a granite wall there to the north in the north cross-cut. We quit there and called that the wall; whether it would be the permanent wall is a question. We did not find any south wall, unless you would call that wall of the tunnel as you go in, just before you get to the cross-cut; that might be termed a wall there. It shows movement there on the side of the streak of granite. The cross-cut running south from the main tunnel is all in decomposed granite. Between the north wall and what I say might be termed the south wall along the line of the tunnel is brown stained granite, a solid body of quartz porphyry. There is no copper showing there. The values seem to have leached out when receded by the waters. In my judgment that is the vein. I said I saw nothing that I would call a fault in the ground in controversy. My reason for saying that is the vein keeps its same general course all the way down the hill, as disclosed in shaft No. 19; I could not come to any other conclusion as a practical miner. The material in tunnel 36 resembles the material in certain points that I sunk on in the Pacific. It might be a little bit harder up there in the Pacific, is the only difference; there is not so much of the brown staining.

(Testimony of Clinton C. Clark.)

We only got about two feet in bedrock in tunnel 35. We just simply wanted to find the vein there and was in a rush to do other work. We ran that tunnel some time last winter; I don't know when it was started, we continued it when we represented last Fall a year ago. It was not in bedrock before we started the last work there; we started in a slip, and at the end we were two or three feet in the bedrock. The exposure there is brown stained quartz and quartz porphyry mixed. We cross-cut just a little to the north, possibly six or eight feet, such a matter.

Q. Well, how much of that cross-cut and the tunnel is in what you have termed vein material?

[453] A. Just about what is shown there,—about eight or nine feet.

The WITNESS.—We did not cross-cut for the wall there; we did not find the walls. We found the course by the way the vein lays there; there were seams running east and west. That too has a southerly dip. The data is pretty scanty there to judge the dip; if we had sunk shaft 19,—that in conjunction with the other work done farther up the hill would show the dip in tunnel 35. We determine the dip by the work done farther up the hill and in tunnel 36, and work done in tunnel 35; we located shaft 19 and sunk it to its present depth and got into the vein. We determined the dip in tunnel 35 by the seams and stratification of that stuff that is in there, in the two feet of bedrock that shows. Further, the work done out there afterwards near the railroad in

(Testimony of Clinton C. Clark.)

shaft 19 conclusively determines it. We sunk shaft 19 this summer, the summer of 1911. Shaft 21 was started, I think, a little bit prior to the starting of 19. They went over and started this one, and after they finished it they went back and completed shaft 21. Shaft 19 was probably commenced in July or August. I did not work there; I just had a man working with Mr. Mason. I have been down shaft 19 two or three times. In conjunction with the other work, and the seams and stratification in shaft 19 I determine the strike. The seams and stratification in shaft 19 run in an easterly and westerly direction. The ladder is on the southwest corner. It is seventy-five or eighty feet deep. The bottom of the shaft was full of talc and porphyry, granite porphyry and quartz porphyry. The talc is all one big body there; there is little stratification through it; the shaft is all in talc. The stratification are not all one clear seam of talc across the shaft; quartz porphyry in its soft states. The shaft is located parallel with the vein, and the seams run parallel with the shaft. Therefore, this stratification would be parallel with the vein. The seams would start out of one side of the shaft that the ladder was on and run across to the opposite side; the ladder would be on the west side of the shaft, and the seams run from east to west. I saw the rock you call aplite is being mined on the Butte hill for ore. It was mined in the Modoc. I mined it myself when I was leasing there. The ore appeared in a whitish form, with black specks of [454] copper shot all through it. It was in a vein.

(Testimony of Clinton C. Clark.)

It was in one place in the vein. There was about two feet of that went nine per cent copper. We did not determine its length; we did not work it out. We were shut off on account of expiration of our lease before we could work it out. It might possibly have had quartz crystals in it. I do not believe I heard Mr. Mason speak of some ore up in that neighborhood somewhere that looked like peanut candy.

Complainant's Exhibit 21 might be called quartz,—quartz porphyry. It is practically the same as Defendants' Exhibit 73 that I brought in, except that our 73 is stained with the green copper.

Q. Mr. Clark, what do you see in shaft No. 1 that leads you to form the conclusions that it would justify location and development as a mining claim, with any reasonable prospect of discovering pay ore?

A. Well, I might answer that question by saying an instance that I know of here,—what would justify a mining man or a prospector locating the Anaconda mine, or the Mountain View? The Mountain View had not an assay in the surface of it,—for four hundred feet you could not get an assay there.

The WITNESS.—I saw vein material in shaft No. 1 that would justify me as a mining man in locating and developing that as a mining claim, with reasonable prospects of discovering ore; in shaft No. 2 the circumstances are the same. My reasons and conclusions are the same for shaft No. 9, the timbered shaft. A prospector that would not locate that had better go out of business and quit prospecting. I came to the same conclusion as to the Hornet shaft.

(Testimony of Clinton C. Clark.)

In shaft No. 9, I base my judgment upon what I see in the cross-cut from the shaft. I see no difference between the part of the district east of Silver Bow Creek and that west of Silver Bow Creek with reference to copper values after it gets to water level. There might be in several instances this difference before you get to water level,—in former days there was never any placer mining done on the east or southern side of Silver Bow Creek. Therefore, this claim you have located here for placer is of no particular use for the gold that is in it. On the east side you find a great deal of this cuprite and chrysocolla near the surface. You do not find [455] so much of it on the west side. We found it on the Wild Bill on the Surface in 1883. I do not know that there is any other showing among the producing mines of Butte. On the east side at times we found native copper, in the Pacific. I think you can find it on the west side in the Parrot. I think I got native copper there myself, in the two hundred and twenty-five foot level. I do not know of any other mines it has been found to my personal knowledge. The vein material on the Pacific in places was largely like this exhibit 73 I brought in from there, after it got down a little where the ore showed fairly well. On the surface there was a portion of the vein quite soft—this green soft material Mr. Winchell called aplite, and said it wasn't soluble, but we demonstrated that it was soluble, and went fifteen per cent copper; that was the material part of the shipment we made. That was from the southern lead. Of course, I don't

(Testimony of Clinton C. Clark.)

know the term aplite at all. When he came there we called it quartz aplite.

Redirect Examination.

(By Mr. NOLAN.)

The WITNESS.—I remember the time that Mr. Winchell made the examination of some of the rock that is now referred to as aplite by him; that was in the spring of 1902.

Q. And did he have any designation for this material different from the designation that he gives it now?

By Judge BOURQUIN.—Objected to as incompetent, in that it would be hearsay, and if intended for impeachment no foundation has been laid.

A. Well, he called it aplite at that time, and he calls it aplite now.

The WITNESS.—I noticed this chrysocolla on the west side in the Wild Bill. There was some of in the Parrot, in the Grouse, what we called the Shakespeare Parrot. In answering a question put to me on direct examination, speaking about parallel leads, I said that the closest distance between parallel leads within my knowledge was thirty-five feet. At the point where I observed it, in the Mountain View mine, the intervening ground was not mineralized so as to become [456] ore. I presume up at the Modoc there is six or eight feet, which is the greatest distance I know of, where there is a replacement of the granite adjacent to the lead. I do not believe I was in any other mines on the east side in the neighborhood of this ground where the bedrock was

(Testimony of Clinton C. Clark.)

reached, any more than the Bullwhacker; I saw the showing made there.

Recross-examination.

(By Judge BOURQUIN.)

The WITNESS.—This streak I have reference to in the Modoc which was mineralized for about six feet beyond the walls of the vein, widened out to two or three posts wide, and the intervening six or eight feet was mineralized. The main vein had been mined out by Mr. Daly in the early days. I couldn't say whether this streak continued any distance on its course after it left the main vein. It was not all mined out. I had cut it from one end, and it was cut at the other end for a distance of three or four hundred feet; it lay immediately north of the main vein, six or seven feet, and lying parallel with the vein after it resumed its regular course; in its widest part it was fully as wide as the main vein. The country between the two ore bodies was pretty well impregnated with low-grade copper, porphyry and granite filling, and lay parallel there for something like two or three hundred feet; as far as I went, they were six or eight feet apart.

(Subscribed by Clinton C. Clark and sworn to before the master, January 19th, 1912.)

[Testimony of William R. Hocking, for  
Defendants.]

WILLIAM R. HOCKING, a witness duly called and sworn on behalf of the defendants, testified as follows:

Direct Examination.

(By Mr. NOLAN.)

The WITNESS.—I am an assayer for nine years. I have followed that business in the City of Butte nearly all of the time. My place of business is known as the Rombauer assay office. I acquired the knowledge in Butte and British Columbia. It was mostly practical, I attended a college in Victoria. My business here is extensive; I do a good business. I assay for nearly everything, including gold, [457] silver, copper and silica. I know a gentleman by the name of John Stafford. He brought samples for me to assay. I issued certificates to him showing what the results were. Calling my attention to Defendants' Exhibits 71 and 72, those are the certificates I issued to him. I remember him *bring* the samples from which those assays were made. On the 16th of December, 1911, there were five samples brought to me; they were pieces of rock; they were numbered at the time they were turned over to me. I made the assays myself. I issued the certificate, Defendants' Exhibit 71, to him showing the values they contained; that certificate correctly represents the ore values of those samples which were assayed by me.

Defendants' Exhibit 71 offered and received in

(Testimony of William R. Hocking.)

evidence. He brought other samples to me to have them assayed on December 18th; those samples were numbered when he brought them in, 1, 2, 3. I furnished him a certificate showing the assay values of those samples; Defendants' Exhibit 72 is the certificate I issued. That certificate correctly represents the values of those samples. I assayed those samples for silica and copper.

(Defendants' Exhibit 72 offered and received in evidence.)

Defendants' Exhibit 71 was assayed for silver, silica and copper.

I know a gentleman named E. E. Watson. He brought samples to me representing C. C. Clark on December 20th; they are numbered from 1 to 15 inclusive. I assayed those samples, and issued a certificate showing the assay returns from those samples. Defendants' Exhibit 53 is the certificate I issued showing the assay values; those samples were assayed for copper and silica; that exhibit correctly shows the assay returns of those samples.

(Defendants' Exhibit 53 offered and received in evidence.)

Cross-examination.

(By Judge BOURQUIN.)

The WITNESS.—The college I attended in Victoria was a preparatory school where they taught chemistry. That was not before I started my practical work. I started for Kearney and Hand in 1894 in Butte. I worked for them about six months; I attended school six months; I did not take a degree.

(Testimony of William R. Hocking.)

I have studied chemistry sufficient [458] for assaying. It is not a difficult matter to assay the common metals. I assayed those rocks and examined them for silica as well as copper and silver. There are some of the smelters that buy silica ores. You find as much or more silica in granite or aplite. Those samples were brought to me in sacks similar to these, each sample in a separate sack, about five or six pounds to a sample. The samples seemed to me to be an average picking down the face; some of them were about as large as your fist and others were smaller. I would not say that the most of the samples were in large pieces. I would say they were just merely an average sample. There were pieces as big as your fist down to just dirt. I know nothing from whence they were taken. I simply assayed the rock and made my returns. They said to be very careful about them; they were lawsuit samples. The rock brought to me is characteristic of that Bullwhacker stuff out there. The ore was copper, silica, carbonate and copper oxide, in some of the samples. Some of the samples ran very low, simply a trace. The material that composed those samples was all green, all stained with copper stain, nearly all of the stuff that they brought in, some more so than others. I did not notice any rock amongst the samples known as aplite. I would not be absolutely certain that I know aplite when I see it. Most of those samples that were as large as my fist were granite and porphyry and stuff like that. There was some cuprite, red oxide of copper in it; I would not say any of those

(Testimony of William R. Hocking.)

large pieces were of that character of rock. This granite I mention did not carry any of the red oxide. I think the samples I am referring to are the ones brought in by Mr. Watson. The first five samples he had were all showing high-grade copper oxide or cuprite; the rest of them were all green,—just merely green. The sample 14,—the Watson sample—shown in Exhibit 53, I would call that carbonate or silicate; I am sure it was one or the other. That is apparently a very high-grade sample. I do not remember whether there was any copper oxide in it. Number 11 on Exhibit 33 was not a high-grade sample,—just merely green. I made no notes or memorandum as to the character of the sample. I remember samples 1, 2 and 3 and 5 on Exhibit 71 from the numbers on my books, and I remember the character of the ore; I would say there was quite [459] a lot of copper oxide in those; there was a green kind of rock with kidneys of cuprite, right in the green carbonate. Copper oxide carries somewhere around eighty per cent copper. I do not remember the two on Exhibit 72, on the Rabbit Discovery. I think there was a little copper oxide in some of those; I am not positive.

Redirect Examination.

(By Mr. NOLAN.)

The WITNESS.—I said that in the case of the sample brought by Watson that they had the appearance of samples picked down fairly representing the material. I would not know where they were taken from, but they were just ordinary samples like is

(Testimony of William R. Hocking.)

generally brought in of the ore,—some coarse and some fine. I say each sample contained a sack full the same as the sacks you have on the table,—the larger sacks, most full. I would say the size of the sack would be indicated by Complainant's Exhibit No. 22.

(Subscribed by the witness and sworn to before the master.)

By General NOLAN.—I will read from the record now the testimony of John Hoyland, who is dead, given in the case of the Butte Land and Investment Company, Pat Mullins, Levi J. Hamilton and Olivia H. Hopkins against R. C. Merriman, Louis Mason, John MacGinness and F. Augustus Heinze.

By Mr. SHELTON.—We object to the testimony upon the ground that the testimony of this witness given in another case is not admissible in this case for the reason that it is hearsay and incompetent.

By General NOLAN.—The purpose of showing the admissibility of this,—of course you do not make any question,—I will furnish the proof later on that Hoyland is dead, and you do not make any question about the condition in which the record is,—that is, I need not call the stenographer.

By Judge BOURQUIN.—That is correct.

By General NOLAN.—For the purpose of showing the competency of this evidence, in the light of the objection made, I desire to offer in evidence the judgment-roll, showing the issues involved in that case, and the fact that this is the original I will have to read [460] the judgment-roll into the record.

This is the judgment-roll in case 9,000.

Mr. SHELTON.—We object on the ground it is irrelevant and immaterial.

By General NOLAN.—(Reading:)

The plaintiff complains and alleges that the Butte Land & Investment Company is now and at all times mentioned has been a corporation organized and existing under the laws of Montana.

That the plaintiffs are now and at all times herein mentioned have been the owners and (except as to the acts of trespass hereinafter specified) in possession and entitled to the possession of the following described piece of mining ground situated in T. 3 N., R. 7 W., Silver Bow County, Montana, to wit: Beginning at Corner No. 4 of Survey No. 3379 (for which patent was issued on December 19th, 1895), a granite stone marked 4-3379; thence with magnetic variation 21 degrees 30 minutes E., N. 80 degrees 50 minutes W. and 182 feet to corner No. 5, a quartz stone marked 5-3379; thence with magnetic variation 19 degrees 15 minutes E., S. 77 degrees, 12 minutes W., 906.8 feet; thence with magnetic variation 20 degrees E., N. 12 minutes west, 600 feet; thence with magnetic variation 19 degrees, 15 minutes E., N. 77 degrees 12 minutes E. 378 feet; thence with magnetic variation 20 degrees 15 minutes E., S. 63 degrees 15 min. E. 482.5 feet more or less to corner No. 3 of said Survey No. 3379 and cornerstone 20x8x6 inches, marked 3-3379; thence with magnetic variation 21 deg. E. S. 42 deg. 05 min. E., 398 feet to place of beginning; together with all of the mines,

ores and minerals therein contained.

That heretofore while the plaintiffs were owners in possession and entitled to the possession of said mining ground the defendants, without right and without the consent and against the wish of the plaintiffs, entered into and upon the said mining ground and mined and extracted and carried away therefrom and converted to their own use, ores carrying gold, silver, copper and other valuable metals to the value, as plaintiffs are informed and believe, of five thousand dollars; that said defendants have not paid the [461] plaintiffs for the same or any part thereof.

Wherefore, the plaintiffs ask judgment against the defendants of the sum of five thousand dollars, and costs of suit.

Plaintiffs for further and equitable cause of action against the defendants allege:

1st: That the plaintiff the Butte Land & Investment Company is now and at all times herein mentioned has been a corporation organized and existing under the laws of Montana.

2nd: That plaintiffs are now and at all times referred to herein have been the owners and (except as to the acts of trespass hereinafter specified) in possession and entitled to the possession of the following described piece of mining ground situated in T. 3 N., R. 7 W., Silver Bow County, Montana, to wit:

(Same property as described in foregoing part of complaint.)

That the said piece of mining ground is patented under the laws of the United States, and that the

estate, right and title of these plaintiffs therein is valuable for the ores of gold and silver and copper in said claim contained, and that there are large quantities of valuable ores in said claim the property of and belonging to these plaintiffs.

3rd: That heretofore, to wit: During the year 1901 while the plaintiffs were owners in the possession and entitled to the possession of the said mining ground, the defendants, without their consent and without right, by means of a certain shaft, levels, drifts and other underground workings, entered upon and into plaintiffs' said mining ground and as plaintiffs are informed and believe, began to mine, carry away and convert to their own use large quantities of valuable ores carrying gold, silver and copper. That as plaintiffs are informed and believe the defendants have heretofore mined and carried away and converted to their own use from said mining ground ores to the value of five thousand dollars.

That said defendants are now engaged in mining, carrying away and converting to their own use valuable ores belonging to plaintiffs from said mining ground, and threaten to and will unless enjoined by an order of this court, from day to day enter upon said mining ground, and mine, carry away and convert valuable ores therefrom to [462] their own use.

4th: That these plaintiffs have no means of ascertaining the exact amount or value of the ores heretofore extracted or carried or which will hereafter be extracted or carried away from said mining ground, and that unless they are enjoined therefrom

the plaintiffs will be obliged to bring numerous actions against the said defendants to recover the value of said ores, and will be obliged hereafter to rely largely on the good faith of said defendants to ascertain the amount and value thereof.

WHEREFORE plaintiffs ask that an injunction pending the termination of this action be issued, restraining and enjoining the defendants from entering upon plaintiffs' said mining ground, or mining or carrying away or extracting or converting to their own use any ores or minerals therefrom.

2nd: That plaintiffs be adjudged the owners of said mining ground and entitled to the possession thereof, and that upon the final determination thereof the defendants and all persons acting through or under them be forever enjoined from entering upon and into or mining or carrying away any ores therefrom.

McBRIDE and McBRIDE,  
Attorneys for Plaintiffs.

(Verified by Patrick Mullins January 22, 1901.)

(Filed Jan. 22, 1901.)

**AMENDED AND SUPPLEMENTAL ANSWER  
OF R. O. MERRIMAN AND LOUIS MASON.**

Come now the defendants R. O. Merriman and Louis Mason, and leave of court having been obtained, file this, their separate amended and supplemental answer and cross-complaint to the complaint of plaintiffs on file herein, and allege and say:

1: Deny each and every allegation contained in said complaint on file herein, except as hereinafter specifically admitted, qualified or denied.

2: Admit that the plaintiff, Butte Land & Investment Company is a corporation.

3: Deny that the plaintiffs, or either of them, are now, or [463] were at all the times mentioned in plaintiffs' complaint or at all, the owners, or in possession, or entitled to the possession of the mining ground mentioned in plaintiffs' complaint, except as hereinafter set forth.

4: Deny that the defendants R. O. Merriman and Louis Mason, or either of them, while said plaintiffs, or either of them, were owners in possession or entitled to the possession of the said mining ground, or at all, without right, entered into or upon the said mining ground or mined or extracted or carried away therefrom or converted to their own use, any ore carrying gold, silver, copper or other valuable metals, of the value of five thousand dollars, or of any other value or at all.

5: And defendants R. O. Merriman and Louis Mason, for answer to plaintiffs' further and equitable cause of action set out in said plaintiffs' complaint, deny each and every allegation thereof, except as hereinafter specifically admitted, qualified or denied.

6: Deny that the plaintiffs or any of them are now or at all or any of the times referred to in plaintiffs' complaint have been the owners or in possession or entitled to the possession of the mining ground described in plaintiffs' further and equitable cause of action.

7: Deny that during the year 1901, or at any other time, while the plaintiffs were the owners or in the possession or entitled to the possession of the

said mining ground these answering defendants without right or without the consent of plaintiffs or at all, by means of a certain or any shaft, levels, drifts or other underground workings, entered upon and into the plaintiffs said mining ground, or carried away therefrom, or converted to their own use, large or any quantities of valuable ores carrying gold, silver or copper to the value of five thousand dollars or any other sum or amount.

8: Deny that said answering defendants are now engaged in mining, carrying away or converting to their own use valuable or any ores belonging to plaintiffs from said mining ground, or that they threaten or will, unless restrained by an order of this court, enter upon said ground or mine carry away or convert valuable or any ores therefrom to their own use or at all.

[464] 9: Deny that the plaintiffs have no means of ascertaining the exact amount or value of the ores alleged to have been extracted or carried away by these answering defendants, or which will as alleged hereafter be extracted or carried away from said mining ground; and deny that unless these defendants are enjoined therefrom plaintiffs will be obliged to bring numerous or any actions against these defendants to recover the value of such ores, or that plaintiffs will be obliged hereafter to rely largely or at all on the good faith of these defendants to ascertain the amount and value of such ores so alleged to have been taken or to be about to be taken.

And these answering defendants, R. O. Merriman and Louis Mason, for a further answer and cross-

complaint and equitable defense to the complaint of plaintiffs herein, allege:

1: That the title which the plaintiffs allege they have to the premises described in their complaint on file herein is under and by virtue of a certain patent granted by the Government of the United States to the Butte & Boston placer claim referred to in the plaintiffs' complaint, the Declaratory Statement of which claim is recorded in Book "B" on page 24 of Placer Claims in the office of the County Clerk and Recorder of Silver Bow County, Montana, on or about the 20th day of December, A. D. 1890, and which said patent was granted to one S. V. Kemper and Josephine Lorenz, the predecessors in interest of the plaintiffs herein.

2: That the application for said patent was made on the 11th day of May, 1891. That the patent to said claim was granted on the 19th day of December, 1895, and is recorded in Vol. 236, page 313, in the General Land Office at Washington, D. C., but that the same is not of record in the office of the County Clerk and Recorder of Silver Bow County, Montana.

3: That the said patent as granted as aforesaid by the Government of the United States, as hereinabove set forth, contained the following express reservations, conditions and stipulations, to wit:

"First: That the grant herewith made is restricted in its exterior limits to the boundaries of the said mining premises" (being [465] the same premises described in plaintiffs' complaint) "and to any veins or lodes of quartz or other rock in place bearing gold, silver, cinnibar, lead, tin, copper or

other valuable deposits which have been discovered within said limits subsequent to, and which were not known to exist on the 11th day of May, A. D. 1891."

"Second: That should any vein or lode of quartz or other rock in place bearing gold, silver, cinnibar, lead, tin, copper or other valuable deposits be claimed or known to exist within the above described premises at said last named date, the same is expressly excepted and excluded from these presents."

"Third: That the premises hereby conveyed may be entered by the proprietor of any vein or lode of quartz or other rock in place bearing gold, silver, cinnibar, lead, tin, copper or other valuable deposits, for the purpose of extracting and removing the ore from such vein or lode should the same or any part thereof be found to penetrate, intersect, pass through or dip into the mining ground or premises hereby conveyed."

4: That at the time of the location of the Butte & Boston placer claim, and the survey thereof, and at the time of the application for said patent on the said 11th day of May, 1891, a lode, vein, and deposit of mineral, of quartz and other rock in place carrying gold, silver, copper and other valuable minerals was known to exist within the boundaries of said Butte and Boston placer claim and that the fact that the said vein did exist within said premises was known to the said S. V. Kemper and Josephine Lawrence, the patentees of said claim and their privies in interest therein, and the community generally on said 11th day of May, 1891, and at all the times hereinbefore mentioned.

5: That thereafter and on the 19th day of May, A. D. 1900, Samuel Kift and Isaac Knoyle, then citizens of the United States, went upon the said premises mentioned in plaintiffs' complaint, being the same premises described in the said patent from the Government of the United States, and proceeded to locate the same as a lode claim on said lode and vein theretofore known to exist prior to said application for patent, by putting up a notice at the discovery shaft of [466] said claim, containing the name of the lode, the date of location and their own names as locators, and containing the number of lineal feet along the course of said vein each way from the point of discovery, with the width on each side of the center of the said vein, and the general course of said lode; and distinctly marked the boundaries of said claim upon the ground so that said boundaries could be readily traced; and did afterwards, to wit, on the 2nd day of June, A. D. 1900, cause a declaratory statement of said location and mining claim, and which was designated as the Hornet Quartz Lode Mining Claim therein, under which said name said claim was located as aforesaid, to be filed in the office of the Clerk and Recorder of Silver Bow County, Montana, and recorded Pat. page 384, Volume T, Lode Location Records of said County, a copy of which is hereto annexed marked Exhibit "A," and made a part hereof; that thereafter on the 27th day of December, A. D. 1900, the said Samuel Kift and Isaac Knoyle caused an amended declaratory statement of said location of said Hornet quartz lode mining claim to be filed in the office of the Clerk and

Recorder of Silver Bow County, Montana, which is recorded on page 213, Volume "U" of the lode location record of said County, a copy of which is hereto annexed, marked Exhibit "B" and made a part hereof, whereby and by reason of all of which said acts as aforesaid, the said locators became the owners of and entitled to the possession of said Hornet quartz lode mining claim; that on the 21st day of May, A. D. 1900, the said Samuel Kift and Isaac Knoyle executed, acknowledged and delivered to Louis Mason, one of the answering defendants herein, a good and sufficient lease and bond of the said premises, a copy of which is hereto annexed, and marked Exhibit "C," and made a part hereof; that on the same date the said Louis Mason assigned and transferred for good and valuable consideration the said lease and bond, and all of his rights therein, to R. O. Merriman, the other answering defendant herein, and said R. O. Merriman subsequently and for a good and valuable consideration transferred one-half interest in said bond and lease to said Louis Mason; and that said defendants, R. O. Merriman and Louis [467] Mason were in possession of the said Hornet quartz lode mining claim at the time of the beginning of this suit and the issuance of the restraining order herein, under and by virtue of said bond and lease. That the said Hornet quartz lode mining claim covers the same ground and is part and parcel of said Butte and Boston placer claim referred to in plaintiff's complaint.

6: That thereafter and in the month of May, A. D. 1900, and upon the respective dates mentioned

in the various declaratory statements hereinafter referred to as Exhibits "D," "E," "F," and "G" as the dates of location thereof, the defendant R. O. Merriman went upon the said ground, known as and referred to herein as the Butte and Boston placer claim, and located what are known as the Gulf, Hope, Rabbit and Olivia quartz lode mining claims on the lode hereinbefore referred to, as having been known to exist prior to the application for said Butte and Boston placer, by putting up a notice on each of said claims at the discovery shaft thereof, containing the name of the lode, the date of location, and his own name as locator, and containing the number of lineal feet in length along the course of said veins each way from the point of discovery, with the width on each side of the center of the vein, and the general course of the said lode, and distinctly marked the boundaries of each of said claims upon the ground, so that said boundaries could be readily traced; and did afterwards, to wit, on the dates as indicated respectively upon the filing marks of the clerk and recorder of Silver Bow County, Montana, on said declaratory statements, copies of which are hereto attached and marked Exhibits "D," "E," "F" and "G," and made a part of this pleading, file in the office of said clerk and recorder of Silver Bow County, Montana, the declaratory statement of each of said claims, all of which said filings were within ninety days after the locations of said claims, and within the time required by law to be filed. Reference is hereby made to each and all of said exhibits for the purpose of this pleading.

7: That before the expiration of ninety days from the date of posting the said notices of location on each and all of said claims hereinbefore referred to as the Hornet, the Gulf, the Rabbit, the Hope and the Olivia quartz lode mining claims, the locator and [468] locators thereof sunk a discovery shaft upon each of said claims to the depth of at least ten feet from the lowest part of the rim at the surface of each of the discovery shafts; and within ninety days after the date of posting said notices, and before the expiration of ninety days from the date of posting the same, located the same by marking the boundaries thereof with substantial stakes as described in the declaratory statements marked Exhibits "D," "E," "F" and "G," and made a part hereof, and by filing in the office of the Clerk and Recorder of Silver Bow County, Montana, in which county said claims are situated, declaratory statements of each lode, containing the name of the lode and the name of the locator and date of location, and number of feet claimed in length on each side of center—of discovery shaft,—and the general course and direction of said claims, as will more fully appear by reference to the said Exhibits "D," "E," "F" and "G," which are made a part of this amended and supplemental answer.

8: That the ground covered by the said location of quartz claims hereinbefore referred to is the identical ground covered by said locations of the Butte and Boston Placer Claim, and said quartz locations and all thereof are within the limits of said Butte and Boston Placer Claim.

9: That the defendant Louis Mason claims the title of one-half interest in the said mining claims and premises, and all thereof, by purchase and proper mesne conveyances from the defendant R. O. Merriman.

10: That these answering defendants have and claim the legal right to occupy and possess the said premises, and are entitled to the possession thereof, and to the minerals and ores therein contained by virtue of full compliance with the local laws and rules of miners in the said mining district, the laws of the United States and the State of Montana, and by actual prior occupation as lode mining claims located on the public domain of the United States. That the representation work for the year 1900 was done and performed upon all the said claims hereinbefore mentioned by the said R. O. Merriman and Louis Mason, and their predecessors in interest in the said Hornet quartz lode mining claim.

11: That one Percy Delmas, J. H. Burns, William Burns, James [469] Doyle, John Doe and Richard Roe, whose true names are to these answering defendants unknown, claim to have some interest in the said premises adverse to these answering defendants, which said interest has been asserted since the commencement of this action, and are now in possession of said premises and working the same, and extracting valuable ores and minerals therefrom, to the irreparable injury and damage to these answering defendants. That said possession, occupation and working of said claims is without right and without the consent of these answering defend-

ants, who have heretofore been enjoined by an order of this court from working the said claim pending the determination of this action, and defendants are informed and believe, and therefore allege that the said above mentioned Percy Delmas, J. H. Burns, William Burns, James Doyle, John Doe and Richard Roe, whose true names are to these answering defendants unknown, have heretofore and since the first day of May, 1901, mined and carried away and converted to their own use, from said mining ground, ores to the value of one thousand dollars. That said last above mentioned parties are now engaged in mining, carrying away and converting to their own use valuable ores belonging to these answering defendants from said mining ground, and threaten to, and will unless enjoined by an order of this court from day to day enter upon said mining ground and mine, carry away and convert valuable ores therefrom to their own use. That these answering defendants are informed and believe and therefore allege that the said last above mentioned parties are acting in collusion with and by the consent of the plaintiffs Butte, Land and Investment Co., Patrick Mullins, Levi J. Hamilton and Olivia H. Hopkins, and that by the order of this court heretofore made enjoining the defendants herein from working the said premises pending the determination of this suit, the said plaintiffs last above mentioned are prohibited from working said property by themselves or through their agents or other persons acting by, through or under them. That these answering defendants have no means of ascertaining the exact

amount or value of the ores heretofore extracted or carried away, or which will hereafter be extracted or carried away from said mining ground, and that unless they, the said plaintiffs herein, and the said Percy [470] Delmas, J. H. Burns, William Burns, James Doyle, and John Doe and Richard Roe, are enjoined from working the said property the defendants here answering will be obliged to bring numerous actions against the said plaintiffs and other parties mentioned to recover the value of said ores, and will be obliged hereafter to rely largely upon the good faith of said plaintiffs and other parties mentioned to ascertain the amount and value thereof.

WHEREFORE these answering defendants having fully answered the complaint of plaintiffs, pray:

1: That no temporary restraining order be issued herein, as prayed for in plaintiffs' complaint, and that the preliminary order now in force be dissolved.

2: That the said Percy Delmas, J. H. Burns, William Burns, James Doyle, John Doe and Richard Roe, whose true names are unknown to these answering defendants, be required by order of this Court to be made parties to this action, and that they be required to come in and set up their interests in said premises, showing by what authority they have entered upon possession of said premises and are now working and mining the same.

3: That an injunction pending the termination of this action be issued, restraining and enjoining the plaintiffs herein and said Percy Delmas, J. H. Burns, William Burns, James Doyle, John Doe and

Richard Roe from entering upon said mining ground comprised within the limits of the said Hornet, Gulf, Hope, Rabbit and Olivia mining claims, or mining or carrying away or extracting or converting to their own use any ores or minerals therefrom.

4: That defendants R. O. Merriman and Louis Mason be adjudged the owners of said mining ground comprised within the limits of the said above mentioned lode claims, and that they be adjudged entitled to the possession thereof, and that upon the final determination hereof the plaintiffs, and said Percy Delmas, J. H. Burns, William Burns, James Doyle, John Doe and Richard Roe, and all persons *action* through or under them, be forever enjoined from entering upon and into or mining or carrying away any ores therefrom.

C. P. CONNOLLY,  
BREEN & MACKEL,

Attorneys for R. O. Merriman and Louis Mason.

(Verified by R. O. Merriman.)

[471] Following and attached to this complaint is Exhibit "A," which is a declaratory statement of the Hornet Quartz lode claim, made by Samuel Kift and Isaac Knoyle, giving notice and stating that they have discovered a vein or lode bearing silver and copper and other valuable deposits, and that they did on the 19th day of March, 1900, in accordance with the laws of the United States and the State of Montana, locate and claim a mining claim upon said lode or vein, 100 feet in an eastern direction and 1400 feet in a western direction from the center of the discovery shaft, at which point a notice of location was

posted according to law, and 300 feet on each side from the center of said vein at the surface; that the general course of said vein is northwest and southeast; that since the date of location they cleaned out the discovery shaft, which is thirty feet deep, and was filled with dirt for twelve feet, and have run a cross-cut at the bottom 12 feet to the lode, which shows a well defined crevice and valuable deposit; that they distinctly marked the location on the ground by posts and monuments, describing them. Filed June 2d, 1900.

Then follows Exhibit "B," which is an amended declaratory statement of the Hornet lode claim, more particularly describing the said claim and work done, and which was filed for record Dec. 27, 1900, in the office of the County Clerk.

Exhibit "C" is a lease and bond from Isaac Knoyle and Samuel Kift to Louis Mason on the Hornet lode claim, giving him the right to enter upon the claim and to mine and extract ores therefrom during the term of the lease, which was two years. The lease was signed and acknowledged May 2, 1900.

Exhibit "D" is a declaratory statement of the Gulf lode claim, made by R. O. Merriman, filed for record with the county clerk May 24, 1900, stating that on the 9th of May, 1900, he discovered and located the vein, bearing gold, copper and other valuable deposits; that the general course of the vein is easterly and westerly; that he claims 1500 feet along the course of the vein, and 100 feet on the north side and 300 feet on the south side of the middle of the vein; that he sunk a discovery shaft 22 feet deep and

3½ by 7 feet in dimension, and disclosed therein a well defined crevice and valuable deposit of ore; and describing the location of the claim.

[472] Then follows the declaratory statement of the Hope lode claim, made by R. O. Merriman, in which he states that he has discovered a vein or lode of quartz or other rock in place, bearing gold, copper and other valuable deposits, and on the 15th day of May, 1900, did locate the said vein by posting his notice. That the general course of the vein is easterly and westerly. That he claims 1500 feet along the course of the vein, being 550 feet in an easterly direction, and 950 feet in a westerly direction from the point of discovery, and 300 feet on each side of the center of the vein; the boundaries of the claim were duly marked; that he sunk a discovery shaft to a depth of 22½ feet, which disclosed a well defined crevice and valuable deposit of ore. The statement was filed for record May 24, 1900.

Then follows the declaratory statement of the Rabbit lode claim, made by R. O. Merriman, to the effect that he discovered a vein or lode of quartz in place, bearing copper and other valuable deposits, and on the 8th day of May, 1900, located 1500 feet along the course of the vein, which is easterly and westerly, being 100 feet in an easterly direction and 1400 feet in a westerly direction from the point of discovery, and 300 feet on either side of the vein; the boundaries of the claim are then described and its location stated; that the discovery shaft, which is 8 feet deep discloses a well-defined crevice and valuable deposit of ore. It is sworn to by R. O. Merri-

man, and filed for record May 9, 1900.

The Declaratory Statement of the Olivia lode claim then follows. This statement was made by R. O. Merriman, and states that he discovered a vein or lode of quartz in place bearing gold, copper and other valuable deposits, and on the 16th day of May, 1900, located 1500 feet 315 feet in an easterly direction and 1175 feet in a westerly direction along the course of the vein from the point of discovery, and 300 feet on either side of the center of the vein. That the general course of the vein is easterly and westerly. The ground is described, by the markings and with reference to natural monuments and other claims. That for the purpose of perfecting the location a discovery shaft was sunk to a depth of 10½ feet, which disclosed a well-defined crevice and valuable deposit of ore. The statement is verified by Mr. Merriman and filed May 22, 1900.

[473] REPLY TO AMENDED AND SUPPLEMENTAL ANSWER OF R. O. MERRIMAN AND LOUIS MASON.

Come now the plaintiffs, Butte Land & Investment Co., Patrick Mullins, Levi J. Hamilton and Olivia H. Hopkins, and for reply to the amended and supplemental answer of defendants R. O. Merriman and Louis Mason:

1: Deny that the title which plaintiffs assert in their complaint is based entirely upon the patent granted by the Government of the United States to the Butte & Boston placer mining claim referred to in plaintiffs' complaint, but allege to the contrary that their title is also based upon their location, ap-

plication for patent and proceedings thereunder, including those two certain adverse suits, brought in this court upon adverse claims filed in the United States Land Office at Helena, Montana, by Charles S. Passmore et al. against the application of S. V. Kemper and Josephine Lorenz for patent, which said suits were begun on the 25th day of July, 1891, and were prosecuted for the purpose of determining whether or not, at the date of the said application for patent for the said Butte & Boston placer mining claim, there was any known lode within the boundaries of that portion of the said Butte & Boston placer mining claim included in what was called by the said Passmore et al. the "Pleasant View" lode claim and the "Point Pleasant" lode claim, which said actions proceeded regularly to judgment on the 16th day of March, 1895, and said judgments were adverse to the contention that any vein, lode or lead of quartz or other rock in place was, at the date of said application for patent for said Butte & Boston placer mining claim, claimed or known to exist within that portion of said Butte & Boston placer mining claim included within the boundaries of the so-called "Pleasant View" and "Point Pleasant" lode locations that neither of said judgments has ever been appealed from, reversed or set aside, and that these plaintiffs in this action rely upon said judgments as part of their title in this case.

2: Admit that the patent which was issued to the said Simeon V. Kemper and Josephine Lorenz, predecessors in interest of the plaintiffs herein, contained the reservations set out in the said supplemen-

tal and amended answer, but deny that the said reservations [474] referred to any portion of the said ground included in said judgments, but referred solely to that portion of the said Butte & Boston placer claim which was not included within the boundaries of the so-called "Pleasant View" and "Point Pleasant" lode locations.

3: Deny that at the time of the location of the said Butte and Boston place mining claim, or at the time of the survey thereof, or at the time of the application for said patent, on the 11th day of May, 1891, any lode, vein or deposit of quartz or other rock in place, carrying gold, silver, copper or other valuable metals or minerals, was known to exist within the boundaries of the Butte and Boston placer claim, and deny that the said S. V. Kemper or Josephine Lorenz, or their privies in interest, or the community generally, on the 11th day of May, 1891, or at any other time prior thereto, had any knowledge of the existence within the boundaries of said Butte & Boston placer claim, of any lode, vein or deposit of quartz or other rock in place, carrying gold, silver, copper or other valuable metals.

4: Deny that on the 18th day of March, 1900, Samuel Kift and Isaac Knoyle, or either of them, proceeded to locate, or did locate, as a lode claim, any lode or vein within the boundaries of the said Butte & Boston placer mining claim, which lode or vein was known to exist at the time of, or prior to, the said application for patent for said Butte & Boston placer mining claim, and if any such location has been made

plaintiff has an option thereon and an interest therein.

5: Deny that on the 21st day of May, 1900, the said Samuel Kift and Isaac Knoyle, or either of them, executed and delivered to Louis Mason, one of the answering defendants herein, a good or sufficient lease or bond of said property, and deny that the lease or bond, a copy of which is annexed to the said amended and supplemental answer and marked Exhibit "C" is a fair instrument on its face, but on the contrary allege the facts to be that the said instrument is inequitable and unjust on its face, and cannot be enforced in a court of equity, and that the said Kift and Knoyle have brought suit which is now pending in this court to annul said so-called lease and bonds.

[475] 6: Deny that the "Hornet" quartz lode mining claim referred to in said amended and supplemental answer, covers the same ground or is a part and parcel of that portion of the Butte and Boston placer mining claim described in plaintiff's complaint, but, on the contrary allege the facts to be, that the so-called "Hornet" quartz lode claim as staked upon the ground, extends a considerable distance west of that portion of the Butte and Boston placer claim described in plaintiffs' complaint.

7: Deny that in the month of May, 1900, or at any other time, defendant R. C. Merriman went upon the ground known as and referred to herein as the Butte & Boston placer mining claim and located what are known as the "Gulf," "Hope," "Rabbit" and "Olivia" lode mining claims, or either of them, or

any lode known to exist prior to the application for patent for the said Butte & Boston placer mining claim.

8: Deny having sufficient information to form a belief as to whether or not, in the month of May, A. D. 1900, the said Merriman put up a notice on each or any of the said locations, at the discovery shaft thereof, or distinctly marked the boundaries of each or any of the so-called claims upon the ground so that said boundaries could be readily traced, or that within ninety days from the date referred to in his notice of location, copies of which are attached to the said amended and supplemental answer, he sunk a discovery shaft of at least ten feet from the lowest part of the rim of each or any of the so-called discovery shafts at the surface, and therefore deny that he performed any of said acts.

9: Deny that the ground covered by the so-called locations above referred to is the identical ground covered by that portion of the Butte & Boston placer mining claim described in plaintiff's complaint, but allege on the contrary that the so-called locations and the boundaries which defendants claim for them extend considerably west of the piece of ground described in plaintiffs' complaint, and allege that some of them extend north and east of the ground described in plaintiff's complaint.

10: Deny that the said answering defendants have any legal right or any right to convey or possess the said premises described in plaintiff's complaint, or any part thereof, or are entitled to the [476] possession of any part of the premises described in

plaintiff's complaint, or have any legal right to possess or occupy any part of the said Butte & Boston placer mining claim, and deny that any part of the ground included within the boundaries of the so-called location was, during the month of May, 1900, a part of the public domain of the United States, but allege that long prior thereto the same had ceased to be any part of the public domain of the United States.

11: Deny having any information sufficient to form a belief as to whether or not said R. O. Merri-man and Louis Mason, or either of them, or their predecessors in interest in the said so-called Hornet quartz lode mining claim, did any representation work for the year 1900 on the said so-called lode claim.

12: Allege that the said J. H. Burns, William Burns and John Doyle have a lease from these plain-tiffs on that portion of the Butte & Boston placer mining claim described in plaintiffs' complaint, and that said lease was given to the said Burns, Burns and Doyle long prior to defendants' application to file their amended and supplemental answer, and that any act which the said Burns, Burns and Doyle may do is done by them independently, and without any collusion on the part of these plaintiffs, and that their actions are out of the control of these plaintiffs, and that these plaintiffs have no control over them, but on the contrary allege the said Burns, Burns and Doyle act independently, and for themselves, in doing any work which they have done or intend to do upon said Butte & Boston placer claim.

13: Deny any information sufficient to form a belief as to any claim that the said Perry Delmas, John Doe or Richard Roe, or either of them, may make or have to the possession or right of possession to the said portion of the Butte and Boston placer mining claim described in plaintiff's complaint, or to any portion of the ground referred to in defendants' said amended and supplemental answer.

14: Deny that these plaintiffs are now, or at any time have been, engaged in mining, carrying away or converting to their own use any valuable ores or other ores belonging to the said defendants or either of them, or threaten to, or will, unless enjoined by an [477] order of this Court, carry away or convert to their own use any ores whatever belonging to the said defendants.

15. Deny on information and belief that the said J. P. Burns, William Burns and James Doyle, or either of them, since the 1st day of May, 1901, have mined, or carried away or converted to their own use, any ores belonging to the said defendants, or threaten to, or will, unless enjoined by an order of this Court, from day to day, mine, carry away or convert to their own use any ores belonging to the said defendants.

Plaintiffs, having fully replied to the said amended and supplemental answer of the defendants R. O. Merriman and Louis Mason, ask judgment as prayed for in their complaint.

KIRK & CLINTON,

McBRIDE & McBRIDE,

Attys. for Plffs.

(Verified by S. V. Kemper. Filed Jan. 31, 1902.)

(Testimony of John Hoyland.)

By Mr. NOLAN.—I will now read into the record the testimony of John Hoyland, given in that case.

Mr. SHELTON.—We have already made a general objection to the questions as may be read, then if there are any further objections to the questions as you read them, why we will make further objection.

**[Testimony of John Hoyland, for Defendants.]**

“JOHN HOYLAND, called as a witness on behalf of the defendants, being duly sworn, testified as follows:

Direct Examination.

(By Mr. CONNOLLY.)

The WITNESS.—My name is John Hoyland; I have been prospecting and mining for the last thirteen years in Park Canyon from 188 until 1895. I know what is called the Hornet shaft. I was living out there in 1891. I was living right across at Rand's ranch in a cabin there; that might be half a mile from the Hornet Discovery as near as I could guess. I saw ore in sacks at the collar of the Hornet Discovery shaft in May 1891, but I could not tell you how many sacks there was; they were gunny sacks, about three parts full. That must have been about the 6th or 7th of May; I could not swear to the date, but I think it was about the 6th or 7th. It was before the 10th of May, 1891. I just saw the ore in the sacks and looked at it that was all. I could not tell who was working there. I was [478] not down the shaft.

Cross-examination.

(By Mr. McBRIDE.)

The WITNESS.—I could not tell how many sacks

(Testimony of John Hoyland.)

there were, Mr. McBride. We just opened the top of the sacks and looked at it, but I could not tell you how many there were there. I fixed the date about the 6th or 7th. I was going over to Horse Canyon to see some fellows who were working there. That was in 1891, ten years ago. I have no interest in this suit. I am not interested in remembering the date any more than I just know I was going over there; they were working over back of Mr. Conway's cabin there. I don't remember what occurred on the 15th. I remember we opened the sacks. I don't remember anything that occurred on the 15th of May 10 years ago. I would not have remembered that if I had not gone over there and seen the sacks. I don't think it was some other day than the 6th or 7th that I went over there, because they quit there before the 15th; I was over there before they got through. I can't remember anything that occurred two years ago on the 15th of May. I went over to see the Smiths. One is called Henry and the other Frank. I do not know where they are now. One is living there now; he is a miner. I could not swear how many of those gunny sacks there were. I was living out there near Rand's ranch at that time. I was working for myself. I was not working on the 5th of May; I was not working at all at that time. Those boys were working over in Horse Canyon on the 5th of May on a claim called the Carlisle. They were doing some work to get a patent for it.

(Testimony of John Hoyland.)

Redirect Examination.

(By Mr. CONNOLLY.)

The WITNESS.—One of the Smith boys who was there is here in the courtroom, or was this morning; Henry Smith is here.”

By General NOLAN.—I now desire to offer in evidence and read into the record the deposition of Eli Rea. (Reading:)

**[Deposition of Eli Rea.]**

“My name is Eli Rea; age fifty years; my residence is Jackson township, Wells County, Indiana; my postoffice Warren, Indiana, Route 2. In 1890 I was residing at my home in Wells County, Ind. On [479] February 21st, 1891, I landed in Butte City, Montana, and I resided there until about May 20 of same year, when I returned to my home in Indiana. I was familiar with what was then known as Point Pleasant and Pleasant View quartz lode mining claims. I was not acquainted with the exterior boundaries of the Butte & Boston placer, except to know that this placer claim covered about the same ground as did the two lode claims, Point Pleasant and Pleasant View. I am acquainted with Louis Mason, one of the defendants in this action. I knew him in 1891. I was in his employ during the latter part of April and the first part of May of that year. I was employed by him in digging and sinking shafts in both the Point Pleasant and Pleasant View quartz lode mining claims, and I commenced work about April 20 and worked until about May 19th of that year. I have had no experience in mining, except as

(Deposition of Eli Rea.)

above stated. I am not familiar with veins and mining deposits, except as I learned of the same during my employment as above stated. I helped to sink shafts on both these claims and in the one claim we dug two holes about 20 feet apart and at the depth of about 18 feet we struck a solid bed of copper ore, which covered the bottom of each hole. At the bottom of the hole we sunk on the other claim, we found a deposit of copper ore, covering a good part of the hole at the depth of about 16 feet. I took samples from the vein or solid body of the ore found at the bottom of the two holes we sunk 20 feet apart as above stated, and these shafts were sunk and this body of ore found and these samples were taken out during the early part of my employment or about the first days of April. I at once put these samples in my trunk, and when I left Butte on May 20th of that year, I brought the same to my house in Jackson Township, Indiana, and I have kept those samples in my exclusive possession from the date of taking the same until the present time. Here is a sample of the ore taken by me as stated, and kept in my possession, and the same has a string tied around it and attached to which is a label marked Defendants' Exhibit 'A.'

[Mr. NOLAN.—The original deposition is lost and with it the exhibit.]

I worked on the two mining claims, Point Pleasant and Pleasant View above mentioned, about twenty days up to and prior to May 11th, [480] 1891, and during that time helped to sink no less than seven or eight shafts, or holes, and from at least two of these

(Deposition of Eli Rea.)

shafts we extracted copper ore from the mineral-bearing rock and this ore was piled up around the mouth or opening of the shaft from which it was taken, and I helped to put the same into gunny sacks and it was taken away, and this ore, while being taken from the shafts, was for several days exposed to view, and could have been seen by any person passing over the ground near it. During the time I worked on these two claims, I helped to dig and sink ten or a dozen shafts running in depth from sixteen to twenty-four feet. I did not have any of the ore assayed and have no knowledge as to its having been done. I am not familiar with copper ores found in the Butte district, except what I learned during my employment above mentioned. I did not see any of the ore in the Butte district assayed, but from observation I have reason to believe that the ore taken from these two claims would compare favorably with any of the ore I saw in the Butte District.

Q. If you state that you found a vein or veins in the ground hereinabove referred to, state whether or not, in your opinion, the same was of sufficient value to justify a man in spending his time and money in exploiting or developing the same.

By Judge BOURQUIN.—Objected to as incompetent in that the witness is not by any means qualified as an expert, or has not qualified to give an opinion upon such a matter.

A. In my opinion the body of ore we found at the bottom of the two shafts we put down 20 feet apart as above mentioned was alone of sufficient value to

(Deposition of Eli Rea.)

justify any man in spending his time and money in exploiting and developing the same.

Plaintiff's Cross-Interrogatories to ELI REA.

The WITNESS.—During my stay in Butte I lived in a small cabin near what was known as the Parrot Smelter. I have some knowledge of the boundaries of the Point Pleasant lode claim, but cannot give the same from my recollection. But I know that Point Pleasant lode claim and Pleasant View lode claim are each bodies of land lying side by side, but which is the south claim and which is the north claim I am unable to say. The principal part of the discovery [481] work was made near the center of the north claim, and it consisted of sinking a number of shafts. I do not know the names of claims adjacent to Point Pleasant lode claim. I cannot give the boundaries of the Pleasant View claim, and only know that this claim lay by the side of the Point Pleasant claim. The discovery work which I helped do consisted of sinking a number of shafts or holes from 16 to 24 feet deep. As stated, during the time of my employment in April and May, 1891, I helped to sink a number of shafts or holes on these claims, ranging in depth from 16 to 24 feet, and the formation was usually about 12 feet of dark loam, and under this was white granite, a soft stone formation that would yield readily to the pick. These shafts or holes were on an average of four feet square. I cannot give the boundaries of the Butte and Boston placer; but I have reason to believe that this claim covered about the same land as did the Point Pleasant and Pleasant

(Deposition of Eli Rea.)

View claims. I cannot say where the N. W. corner of the Pleasant View was with reference to the N. W. corner of the Butte and Boston placer. I cannot give the location and distances of the corners of the Pleasant View and Point Pleasant with reference to each other and with the corners of said placer. I first knew Louis Mason about thirty years ago when he lived in Jackson Township, Indiana. I last heard from him April 21st, 1911. I am not related to him or to R. O. Merriman. I never had any conversation or correspondence with R. O. Merriman. I last saw and talked with Louis Mason about four years ago, when he came here to bury his wife who died in Butte City, Montana. I have conversed with no one in reference to this case, or the claims involved. I have recently received a letter from Lewis Mason directing me concerning the taking of my deposition by Mr. Simons. My letters are private.

Mr. SHELTON.—We move to strike out the deposition of this witness for the reason that he has refused to answer a question, and that he has refused to produce writings in his possession relating to the matter in controversy.

The WITNESS.—I worked on these claims from April 21st to May 19th, 1891, and during that time worked with Grant Poor and Abe Hudson and no others. In one of these shafts we struck a slide disclosing [482] a body of copper ore. In two of these shafts heretofore described as being about twenty feet apart, and at the depth of about 18 feet we found a vein of copper ore covering the bottom

(Deposition of Eli Rea.)

of each of these shafts. I don't know what you mean by the word "quartz" but we found the material and formation as I have described it. I worked in no mines or upon no claims in Silver Bow County, other than upon Point Pleasant and Pleasant View lode mining claims as herein stated. I have fully described the work I did and the material I found in the development of these two claims. The vein in the two shafts which we sunk about twenty feet apart in or near the center of the north claim were in solid formation. I have fully described these two claims and their relation to each other, and I do not care to make a sketch. I took samples from the two shafts sunk on the north claim near the center; I may have taken a half dozen small pieces. I had none assayed. I at once took these samples to my boarding-house and put the same in my trunk and when I left Butte City on May 20, 1891, I brought the trunk and samples with me to my home and I still have them in my trunk, and the sample marked Exhibit 'A' hereto attached is a part of the same. I have no knowledge of the number of tons extracted during my employment. I saw copper ore in the yards at the Parrot Smelter in the Butte District, and the copper ore which I helped to take from these two claims, Point Pleasant and Pleasant View, resembled in every particular the ore I saw in these yards. There were other mines not far away from these claims, but I have forgotten the names. The depth to solid formation ranged about twelve feet in each opening. My present business or occupation is that of a

(Deposition of Eli Rea.)

farmer. These direct and cross-interrogatories were mailed to me to hand to Mr. Simons, and while in my possession I read each question. I have no relatives in Montana, but my wife has a first cousin named Samuel Jones, living in Butte City. I have two acquaintances living in Silver Bow County now, one is Louis Mason, a party to this suit, and the other is Samuel Jones, my wife's first cousin, and I do not know the latter's address, but the address of Louis Mason is Butte, Park City Addition. I took these samples from these claims as souvenirs, and I kept them to this day to remind me of my mining experience in the [483] West."

**[Testimony of Samuel Barker, Jr., for Defendants (Recalled).]**

SAMUEL BARKER, Jr., heretofore duly called and sworn as a witness on behalf of the defendants, being recalled, testified as follows:

Direct Examination.

(By Mr. NOLAN.)

The WITNESS.—Referring to the map, Defendants' Exhibit 1, I did some work as the result of which this map was prepared. The objects are designated upon the map in the way of tunnels and shafts. For instance, No. 30 tunnel, No. 31 tunnel, No. 36 tunnel, No. 37 tunnel, No. 35 tunnel, and shafts 21 and 19. Since I was on the stand before, I have marked upon the map the boundaries of the property in dispute, so far as this lawsuit is concerned. There has been placed upon this map a certain black line, with the bearings and distances

(Testimony of Samuel Barker, Jr.)

thereon, which were taken from the papers in this case. The boundaries of the property in controversy are as follows: Beginning at the southeastern portion of the tract which I have designated by the letter "A" within a circle, thence north 12' west 600 feet to a point designated "B" in a circle; thence north 77 deg. 12' east 378 feet to a point designated as "C" in a circle; thence north 63 deg. 15' west 317.5 feet to a point designated "D" in a circle, which is also corner No. 2 of the Butte and Boston placer; thence west 818 feet to point designated as "E" within circle, which is also corner No. 1 of the said Butte and Boston placer; thence south 12' east 1332 feet to point "F" within a circle, and also corner No. 8 of the said placer; thence South 67 deg. east 232.5 feet, to point marked "G" within a circle, which is also corner No. 7 of said placer; thence north 12 deg. 48 min. west, 394 feet to point marked "H" within a circle, which is also corner No. 6 of the said placer claim; thence North 77 deg. 12' East 600.2 ft. to point "A," or the place of beginning.

Referring to shaft No. 19, as it is shown on the map here, with reference to the line marked "A" to "B," it is at least twenty feet west of the line "A"—"B." Referring to shaft No. 21 as it is shown on the map, that is just north of the line marked on this map "B"—"C." I should say the center would be from three to five feet north [484] of that line. I made a measurement of shaft No. 21. One hundred and eight and a half feet deep; three by five feet inside of timbers. I have no notations here as to

(Testimony of Samuel Barker, Jr.)

how much of that shaft is in bedrock. It is about three feet as I remember it. Tunnel No. 30 was one hundred and ten feet underground. From the entrance, for some distance towards the face, the ground was caved and I did not attempt to get through there, but I found a hole broken down from the surface which is about thirty feet from the face, from which entrance could be gained to this tunnel. It showed a cross-cut to the south, and then going from there toward the face, a cross-cut to the north from the tunnel. At the first cross-cut, which is to the south, the bedrock was shown seven to eight feet below the now surface of the ground. Those cross-cuts were in bedrock, excepting the back of each cross-cut; in the back of each cross-cut you could see the old wash. When I speak about the back, I have reference to the roof. The length of the cross-cut to the south was seventeen feet from the center of the tunnel, in the direction of south ten degrees east. The length of the cross-cut to the north is twenty-three and a half feet from the center of this tunnel, having a direction of north ten degrees east. The dimensions of No. 1 shaft shown upon the map are about three to five feet, and six feet deep to wash, a total depth of fourteen feet. I did not make any measurement of the Olivia discovery. That shaft is now caved in. I do not find any measurement of No. 2 shaft, as shown upon the map, but I examined it day before yesterday and I should say the size of it to be about four by six feet at the top, and the wash about five feet in depth, and the shaft

(Testimony of Samuel Barker, Jr.)

itself about twelve feet deep. That is assuming the wash depth. In tunnel 31, a cut is shown on the ground now forty-eight and a half feet long. From the entrance to the tunnel,—by which I mean the part which goes underground,—to my first survey point was thirty-six and nine-tenths feet; thence north thirty degrees and twenty-six minutes east, forty-seven and six-tenths feet to point 2; thence north sixty-seven degrees east, sixty-three feet to face. From survey point 1, at a distance along the second course of eleven and a half feet, there is a cross-cut to the northwest. This cross-cut at the time I first made my survey was twenty-eight feet long in [485] the center of the tunnel, and has since been driven in nine feet, making a total length of thirty-seven feet. At the point 16 feet from point No. 1, there is a drift running south eighty-five degrees east thirty-five feet. From survey point 2, at a distance of forty-seven and a half feet, there is a cross-cut running southeasterly fifteen feet in length. I have no depth of the Rabbit Discovery. The excavation originally was larger than it is now. The sides show the wash material that filled it, and the shaft now is about three and a half by five feet, and about twelve feet deep. The wash extends down for about nine feet from the surface. I do not remember of seeing any openings from it when I was on the ground in 1901. Shaft No. 9 is a timbered, two-compartment shaft. The west compartment is four by four feet in the clear, and the east three and a half by four feet. You can see, or get the measurement of forty

(Testimony of Samuel Barker, Jr.)

feet, although it is filled with material from the sides, caved in, which shows that the shaft had a greater depth at one time. There is a cross-cut at twenty-five feet in depth from the collar, running to the north from the shaft. The cross-cut is in ten feet. Immediately below this cross-cut, the material has caved along the north side of the shaft for a distance of about seven feet at the greatest point from the north side of the shaft. Openings 5, 6, 4, 12, 14, 8 and 15 are the collars of shafts which now show on the ground, but which are almost filled to the top with wash material. Shaft 23 is probably ten feet in diameter at the present time, and you can see down for a depth of about twenty feet at least. You can see the real bottom of it. As to shaft No. 9, the wash there is less than fifteen feet deep. I say that because some of the lagging has been removed from the east side of the shaft at a depth of fifteen feet below the collar of the shaft, and the solid ground shows there. The collar of the shaft in the west side is from two feet to two and a half feet above the level of the ground, and therefore I should say the depth of the wash would be less than ten feet. I went into the Vesuvius workings. That is a partially timbered shaft, on a location called the Vesuvius lode claim, which is bounded by the Copper Queen and the Birtha lode and the Butte and Boston placer. The timbers are ten feet above the natural surface of the ground. The [486] shaft is about thirty-two feet deep. The wash shows down in that shaft for about twenty feet, which would be about ten feet

(Testimony of Samuel Barker, Jr.)

from the original surface of the ground. There is a cross-cut to the northwest and also one to the southeast in the bottom of this shaft. From the end of the south cross-cut, there is a drift running to the east and from this, two feet to the end of that drift, there is another cross-cut running to the south.

Going from the northerly lead to the southerly lead, and with reference to shaft 19, the dimensions of that shaft are eighty-two and a half feet deep and three to five feet in the clear; it is timbered. I should say about seventy-two and a half feet is in wash, and about ten feet in bedrock.

Tunnel No. 35 is one hundred and sixteen and six-tenths feet underground. The cut, before you reach the tunnel, is forty-five feet long and about three and a half by six feet in size. I found bedrock in the bottom of that tunnel, up four feet back, and at that point there is a cross-cut to the north about seven feet long, in the bottom of which is shown the original ground or bedrock. On the map, there is not any projection showing the cross-cut. The cross-cut is there. I find my notes are in ink and the cross-cut is shown in pencil. I suppose that is how it got away from me.

Taking up tunnel No. 36, the cut is thirty-nine feet long. From entrance to tunnel to survey point No. 1 is fifty-six and six-tenths feet in a direction north sixty-three degrees and thirty-seven minutes east. At that point there is a working running south seventy-nine degrees and forty-five minutes east, twenty-seven and a half feet. The main tun-

(Testimony of Samuel Barker, Jr.)

nel runs from survey point No. 1, north twenty-three degrees and thirty-one minutes east, eight and six-tenths feet, at which point there is a cross-cut north three degrees east, nine feet. The main tunnel from survey point No. 2 runs north eighty-two degrees and twenty minutes east, thirty-four and two-tenths feet. At this survey point 3, there are two workings, the one running south eighty-five degrees east, sixteen feet, and the other north eighteen degrees and thirty minutes east, twenty-three feet. The size of the tunnel is about three and a half by six feet. I believe [487] that completes the dimensions of these workings.

Tunnel No. 37 is partially caved. I did not get into it from the entrance. I got in through a cave from the surface into the top or back of the tunnel. The cut is thirty-eight and a half feet long. The total length of the tunnel is about fifty feet,—I have it. From a point thirty-eight and a half feet from the entrance to this tunnel, there is a cross-cut running to the north, which connects to a shaft in the cut of No. 34 tunnel, or otherwise known as the Hornet tunnel. Also at the same point a cross-cut running to the southeast to a little opening near the face which is caved out to the north. I did not measure the length of the cross-cut running to the northeast on the ground, but from the map I should call it forty-seven feet. I did not measure the depth at which it connects with tunnel 34.

The dimensions of tunnel 34 are as follows: From the entrance to the cut the shaft to which I referred

(Testimony of Samuel Barker, Jr.)

a moment ago as being in the Hornet tunnel cut is thirty-six and a half feet from the entrance. At fifty-five feet from the beginning of the cut is the entrance to the tunnel. The direction of that cut is north seventy-eight degrees and twenty-five minutes east. My first survey point was two and a half feet inside of the entrance to tunnel. From this point the tunnel runs north sixty-five degrees and forty-three minutes east fifty-one and two-tenths feet; thence north eight degrees and fifty-six minutes east, thirty-nine and eighty-five hundredths feet to a point from which the bottom of the filled Gulf shaft bears south twenty-eight degrees and thirty minutes west, sixteen and five-tenths feet, and the bottom of the Hornet Discovery shaft bears south thirty-one degrees and forty-five minutes west, thirty-three feet. Continuing on the same course, in the main tunnel, for fourteen and two-tenths feet, I have my survey point 3, from which the face of the tunnel bears north fifty-seven east. The tunnel itself varies as to dimensions. Some places it is smaller and some places it is larger,—some places caved and some places timbered. I should say the average would be about four by six feet in the clear. In the tunnel itself I noticed there is an inclined shaft. It is about thirteen feet beyond my survey point No. 3. That would be about [488] forty-four feet west of the face of the tunnel. There is a passage way or cross-cut running from the shaft to the Hornet Discovery. Beginning where it leaves the Hornet tunnel it is quite large. It is about six

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feet wide and about six feet high, and that distance is maintained until you reach what was the bottom of the Gulf Discovery shaft. Then the cross-cut narrows and becomes very small, until the opening is only about four feet in height and only about two or three feet in width, where it connects with the Hornet Discovery shaft. At the place where this cross-cut leaves the tunnel, there is a winze dipping to the south, which connects to the lower Hornet cross-cut, and there is a drift therefrom running to the northeast.

The dimensions of the Hornet Discovery shaft itself are as follows: At the surface this shaft is very large indeed. It has no regular size,—that is it has caved and is rounded in one portion and straight in another, but as you get down where the shaft takes its normal size, it is about four by six feet. You go down at least twelve feet in the shaft before you encounter these dimensions. I presume that the man who sunk the shaft, started it at the size I have given it below, which would be four by six feet. There is no timbering in it and the sides have been caved down from time to time. From the windlass platform that is on the ground now to the surface of the ground as it is now is six feet. From the natural surface of the ground, it is sixteen feet vertically to the point where bedrock is encountered. The shaft continued from that point for seventeen feet to the bottom of the Hornet Discovery shaft. The depth from the bottom of the shaft to the surface of the ground would be thirty-three feet, and

(Testimony of Samuel Barker, Jr.)

from the bottom of the shaft to the surface of the platform above the ground is thirty-nine feet. From the surface of the ground to the surface of the bedrock is sixteen feet; and there would be seventeen feet of the shaft in bedrock.

I noticed what is referred to on the map as the Gulf Discovery. I could see that at the surface now. The ground is caved where the original shaft was, and I can see the filled material in the cross-cut from the Hornet tunnel. On the surface of the ground, the Gulf Discovery shaft would be northeasterly from the Hornet Discovery shaft, about fifteen feet.

[489] Going back to the Hornet Discovery, there is a drift running to the southwest and a cross-cut running to the northeast from the bottom of the Hornet Discovery shaft. Twelve and a half feet is the length of the drift from the bottom of the Hornet Discovery shaft to the southwest. The cross-cut to the northeast from the bottom of the Hornet Discovery shaft is twenty-one feet, and from there a drift extends to the northeast twenty-three and a half feet. In that drift there is a winze. At about twenty-five or twenty-six feet from the Hornet Discovery shaft, the bottom of the winze, which is sunk from the point in the Hornet tunnel where the cross-cut goes over to the Hornet Discovery shaft, is intercepted. That cross-cut does not connect in any way with the Mullins shaft as it is sunk that I can see now. If the winze goes down and stopes were made to the east, it might connect it with the Mul-

(Testimony of Samuel Barker, Jr.)

lins shaft, but that is not the condition now.

Q. I notice on this map here, tunnel 38 and also shaft 11, tunnel 39 and shaft 18, and also shaft 7 and shaft 16, and tunnel 32, and shaft 20, and shaft 10. What are these?

A. They are openings on the ground, more or less filled and caved at the present time. Some reach bedrock and some do not.

Q. I notice also on this map here there are four shafts designated "K," what are they?

A. They are shafts sunk by Mr. Kemper for the purpose of getting patent for the Butte and Boston placer.

Q. There is also a shaft 19. What is that?

A. That is a filled shaft, and—

By Judge BOURQUIN.—No, that is one of your new shafts.

Q. Speaking about the latter shaft, 19, to which I have just now called your attention and of which you have spoken,—I refer to shaft 19 as it appears in the northwesterly portion of the ground in controversy, in the neighborhood of corner No. 1 of the Butte and Boston placer. Is that the shaft about which you have spoken?

A. Yes, sir. In reference to this number and also to shaft No. 9 on this exhibit, they are supposed to be copied from the original map as it was used in this case, and I have looked up, at the request of Judge Bourquin, about shaft No. 9, and it was called [490] shaft No. 3 on the original exhibit and in the original hearing, and possibly this 19 might have

(Testimony of Samuel Barker, Jr.)

been 9 on the original hearing.

Q. Well, now, so that it will eliminate any uncertainty on account of the duplication of these shafts, I will ask you to give another number to shaft No. 19 that we are now speaking of, as it is in the north-westerly portion of the ground.

A. I have designated that as 19-A (marks shaft on map).

The WITNESS.—I have not the dimensions of the shafts designated “K,” but I could get them for you, because I have the original affidavit of Mr. E. H. Wilson, who made the returns to the Surveyor General at Helena, as to the sizes of those shafts, and as to the values thereof. They are mostly covered at the present time. Without referring to that data I do not know the dimensions of them. I remember the size of them as being three by six feet and six feet in depth, but I do not remember any of the others.

I have known this ground, the Butte and Boston Placer, since 1888. In connection with the practice of my profession, I have crossed this ground innumerable times since 1888.

Q. And what, if anything, do you say as to whether or not any placer mining operations have been carried on on this ground since you first knew it in 1888?

By Mr. SHELTON.—That is objected to on the ground that it is immaterial.

A. No placer mining operations were ever carried on within the boundaries of the Butte and Boston

(Testimony of Samuel Barker, Jr.)

placer, to my knowledge, since 1888.

Q. How close to this ground, the Butte and Boston placer, have placer mining operations been carried on, to your knowledge?

Mr. SHELTON.—Objected to as immaterial.

A. At least a mile to the southwest.

The WITNESS.—I was an assistant in the office of Kornberg and Hoff in the summer of 1886. I continued in their employ for a year. On June 10, 1887, I became an assistant in the office of Wilson and Gillie. I continued there until August, 1891, when I went to the College of Montana, at Deer Lodge. Two of my summer vacations were spent in working for Wilson and Gillie, one for Barker and Harper. I [491] graduated in June, 1895, and, after graduation, went into the office of Wilson and Gillie. In December, 1895, I entered the employ of the Anaconda Copper Mining Company. On August 1st, 1897, in partnership with W. W. Pennington, I took over the business of Wilson and Gillie. Since that time, I have carried on, with others, the business of Pennington and Barker, or Barker and Wilson, and the Barker-Wilson Company until the present time, and in general engineering practice. In a general way, the class of work performed by me in the practice of my profession is the surveying of mining claims for obtaining United States patent, making locations and surveying locations, principally of lode claims, and underground surveys and examinations of such, has been my principal

(Testimony of Samuel Barker, Jr.)

work. I am a deputy United States Mineral surveyor.

Q. And in connection with the duties that you perform in relation to the patenting of mining claims, or surveys made preliminary to the issuance of a patent, is it a portion of your duty to determine whether or not leads exist?

A. It is. I have to swear if there is a vein on the claim or not. The regulations of the last few years are very, very much more strict than they used to be, and the deputy mineral surveyor nowadays must satisfy himself that there is a vein in the claim in which he is surveying, and the land office has gone so far as to say that a vein which a deputy describes as having quartz and iron oxide and talc, containing values, or between granite walls,—in Butte, of course,—containing gold, silver and copper, is not sufficient under the law to get a patent. You have got to show them that there is commercial ore there. I say that for the reason that we have to be very careful nowadays in making our reports, or else we will have an inspector on our trail, and take our commission away from us.

Q. And in that connection, are you required in making your report, to give directions, or course or strike to the vein that may exist?

Mr. SHELTON.—That is objected to as immaterial and incompetent.

A. Yes, sir. A line is placed on your map in the instance of lode claims, which is marked “lode line,” and directions and distances [492] are given each

(Testimony of Samuel Barker, Jr.)

way along that line within the parallel end lines of the claim.

Q. And in those instances where you are required to give the direction or the strike of the lead, do you encounter the lead for the purpose of doing that throughout its entire distance?

Mr. SHELTON.—That is objected to as immaterial.

A. No, sir. The workings on the vein,—on the discovery vein in the claim are taken, and the direction as shown by these workings is used as the basis of the lode vein. It might be that only a discovery shaft exists on the discovery vein. The direction of the vein is taken as given by the vein in the shaft. If several others are shown on the same vein, within the same ground, the average direction is given as the lode line.

Speaking of veins generally, I do not remember of ever measuring two veins of the same size. I do not recall any instance in my experience of uniformity in size of the same vein; that is, the walls of the vein, or the vein itself, is not encompassed between two flat planes equidistant from each other. I have never seen the walls of a vein run technically or absolutely parallel. There will be places they will come together and make a pinch in the vein; and there will be places that they part and you have an enlargement of the vein.

Previously to going into business for myself, my operations extended all over the State of Montana, principally at Butte, however. Afterwards it ex-

(Testimony of Samuel Barker, Jr.)

tended into Nevada. All of my work extended to every portion of the Butte district. In the neighborhood of 1891, I know of locations being made in the vicinity of the Butte and Boston placer. To the west it was located as placer, to the east for lode claims. I am not sure but one piece to the southwest was taken as a homestead, because I have been a witness in a great deal of litigation concerning a piece of ground directly south of the Pittsmond, which had to do with agricultural and lode and placer. I have seen the map to which you call my attention of territory adjacent to the ground in controversy. The ground in controversy is shown upon that map near the southwest corner of the map. There are claims, both quartz and placer, shown upon the map. [493] They were located as such. In a number of instances the dates of location are given. That map correctly represents the facts therein appearing, both as to the dates of the location and the pencil markings and the relative position of the claims as shown on the map.

(Map handed to the Examiner by Mr. Nolan and marked for identification Defendants' Exhibit No. 74.)

By Mr. NOLAN.—We now offer in evidence Defendants' Exhibit 74.

Mr. SHELTON.—Objected to as being immaterial and irrelevant and not yet having been shown to be correct.

The EXAMINER.—It will be received in evidence.

(Testimony of Samuel Barker, Jr.)

The WITNESS.—The “Copper Queen” you notice on the map is a lode location called the Copper Queen, which was surveyed for patent being designated survey No. 3959; located April 25, 1890. The boundaries are shown on the map by the black lines enclosing that name. The “Birtha” designated on the map is the name of a lode claim which was afterwards surveyed for patent and designated as survey 3016; that was located Feb. 13, 1886. The “Pacific” appearing on the map is also the name of a lode location, which is designated as survey No. 2320, located July 21st, 1884. The “Colleen Bawn” is a lode claim which was afterwards surveyed for patent and designated as survey No. 1761. It was located Apr. 5, 1880. The “Rio Tinto” is a lode claim, designated as survey No. 5422, which was located November 24th, 1890. The “Pittson” is a lode claim, designated as survey No. 2063, located July 15, 1884. The “Monima” is a lode claim designated as survey 5457, located Oct. 3, 1890. The “Extension No. 2” is a lode claim designated as survey No. 3155 located January 1, 1890. The “Animosa” is a lode claim, designated as survey No. 2463, located Sept. 30, 1890. The “Sarsfield” is a lode claim designated as survey No. 1130, located July 19, 1875.

The Birtha immediately adjoins the ground in controversy. The “Colleen Bawn” immediately adjoins the ground on the southeast. Corner No. 4 of the Butte and Boston placer is also the southwest corner of the Pacific lode. The nearest points of the Rio Tinto, the Pittson and the Monima would be

(Testimony of Samuel Barker, Jr.)

about six hundred feet from the ground in controversy. The "Rising Sun" on the north immediately adjoins the ground in controversy. The "Copper Queen" is immediately [494] adjoining. The west end of the Copper Queen is one of the boundaries of the Butte and Boston placer.

The "Bullwhacker" as it appears on the map is a lode claim, now patented, and designated as survey No. 1741, located Sept. 20, 1885. It immediately adjoins the ground in controversy. The north side line of the Bullwhacker, for its entire distance of fifteen hundred feet, is one of the south boundaries of the Butte and Boston placer.

There are a great number of other lode claims to the south of this ground, not shown upon that map, for a mile or two. Immediately south of the Bullwhacker lode is the Montgomery, now patented, located May 1, 1881. Just to the east and alongside of the Montgomery lode is the Macarona lode, now patented, located Apr. 27, 1888. The Amazon lode is still to the south of the Montgomery, located March 23, 1880, and the Altona is adjoining the Amazon, located May 2, 1879. Still to the south of the Altona and Amazon, is the Gaynor lode, located Apr. 11, 1890. To the southeast of the Colleen Bawn is the Canyon lode, located Oct. 2, 1888, and the Exemption lode, located January 2, 1882. The Rising Sun was located July 31, 1885, and lies to the north of the Butte and Boston placer; the west end line of the Rising Sun being one of the boundaries of the Butte and Boston placer. The "Ella" you notice on the

(Testimony of Samuel Barker, Jr.)

map is a lode location now patented and designated survey No. 1677, located July 28, 1885.

There are some other claims on the map further to the north, but the map itself gives the date of location of some of them.

This ground to the west of the ground in controversy was located and patented as placer ground.

Q. State whether or not that ground located and patented as placer ground to the west, has ever been operated as placer ground.

Judge BOURQUIN.—Objected to as immaterial.

A. Not to my knowledge.

The WITNESS.—The ground immediately to the west of this ground in controversy, the Pittsmont ground, is operated for lode mining,—quartz lode mining operations are being carried on on a very extensive scale indeed. On Defendants' Exhibit 74, "Survey No. 1516, Placer" is a placer claim now patented, originally called the Wilson placer.

[495] Q. Do you know of any placer operations ever being carried on on that ground?

Mr. SHELTON.—Objected to as immaterial.

A. I do not. I was going to say that the portion of that placer was cancelled by the Government and thereafter lode claims were put on it and patented, which are called the Tropic and the Torrid lodes.

Mr. SHELTON.—We move to strike out the answer of the witness as to the cancellation of a portion of the placer referred to and the location of the Tropic and Torrid lodes as not responsive to the

(Testimony of Samuel Barker, Jr.)

question, and further as immaterial and incompetent.

The WITNESS.—I know about the location of the ground as shown on the map here as the Torrid and Tropic claims; they are quartz lode claims and I helped to make the location on the ground. The Torrid and Tropic lodes are within the boundaries of what was originally a portion of said survey No. 1516, the Wilson placer. That portion was cancelled by the Government, and, as I say, those lode claims were patented out of that area.

Survey No. 2952, the May Yohe is a placer claim named after the famous actress May Yohe.

Q. And do you know whether any placer mining operations were carried on on that ground or not?

Mr. SHELTON.—Objected to as immaterial.

A. The work was done for the purpose of patenting,—that is, sinking shafts and such, but no actual placer mining operations were carried on to my knowledge.

The WITNESS.—I do not know whether any quartz mining operations have been carried on on any portion of the May Yohe placer.

Q. Do you know whether any of the properties, quartz properties, in the immediate vicinity of the ground in controversy have been worked to any extent?

A. Yes, sir. The Bullwhacker has. There has been considerable work on the BIRTHA, also on the Pacific and a long tunnel has been driven on the Colleen Bawn to the south. The Amazon-Butte Com-

(Testimony of Samuel Barker, Jr.)

pany did work on the Altona or the Amazon; the Sarsfield has had considerable work done on it; the Lily; the Northwestern had a good deal of work done, and work has been done on the Ella and Rising Sun, and [496] also on the Torrid and Tropic lodes. On the west the East Butte Mining Company have a shaft twelve hundred feet deep, called the No. 2 shaft and to the northwest, or directly north of that shaft, at about two thousand or twenty-five hundred feet, they have another shaft which is twelve hundred feet deep.

The WITNESS.—In the Butte district, generally speaking, the veins have an easterly and westerly course. Some of them run northwest, and southeast; some are southeast and northwest. In the neighborhood of the ground in controversy the general course of the leads is easterly and westerly. The country rock in that neighborhood is Butte granite.

Q. And does the granite over there differ in any particular respect from the granite on the Butte hill where those big leads are?

A. Well, around the Anaconda, the east end of the Anaconda, and at the Rarus, yes, the granite has been thoroughly oxidized so that the original granite cannot be detected, or it is very hard to detect but outside of that zone of intense mineralization, the granite is the same in the Butte and Boston placer district, and that to the west and northwest and northeast. Outside of those two claims I have mentioned it is the same.

The WITNESS.—In my experience I have en-

(Testimony of Samuel Barker, Jr.)

countered what is known in this hearing as aplite. The district to the west of the Big Butte, to the southwest and west, is, for the greater part, aplite. This aplite is a kind of granite. It is called white granite. It is more silicious. It has a lightish color, while the other granite is the gray granite. In the examination I made of the ground in controversy I saw some aplite. It does not constitute the general bulk of the country rock there. The gray granite is there in greater quantity than the aplite or white granite. At the surface, it is wash out there, that has been carried down from the steep hillsides to the east. In the solid rock, it is every conceivable dip and direction. The bands, if you might so term them, of aplite, are generally small. They differ in color underground from the gray granite. The gray granite was there first and the aplite has been intruded into the granite. It would seem that in places the granite, that is the gray granite, was not entirely solidified, because you [497] will find a fading from aplite to the gray granite in places, and therefore I should think the aplite was intruded before the granite was cooled. I have found aplite in a number of places on what is known as the Butte Hill. It is there intrusive into the granite. When I use the term granite, I will always mean the gray granite.

In some portions of this district veins have walls or boundaries; in other portions not. Now, for instance, to the west are silver veins and the walls are in most cases well defined, but you take it in the copper district no well-defined walls are found in a great

(Testimony of Samuel Barker, Jr.)

number of the mines that are being worked at depth. That is due to the mineralization of the granite by replacement by copper solutions, or by solutions containing copper and other metals.

Referring to mineralization, you could either have very small cracks or open fissures in the beginning. The meaning of replacement through enrichment as applied to those cracks and fissures means the vein solutions in their flow through these cracks and fissures have enlarged the original fissure. They have spread out into what was the original country rock,—the granite,—and have replaced some of the constituent parts of the granite by minerals. This replaced rock then becomes a portion of the vein. In that instance, where the replaced country rock becomes a portion of the vein, the boundaries of the vein are placed where the mineralization ceases.

Quartz for instance would be gangue; clay would be gangue,—in vein filling. Talc would be a portion of the vein,—one of the constituent parts of vein filling.

Q. And take it where a fissure, for instance, runs through granite, the walls of the fissure on either side are granite. In that instance, what is generally the vein filling?

A. Quartz, iron oxide, clay and altered country rock, altered granite.

The WITNESS.—In the alteration of granite, the granite is attacked by solutions containing minerals, and it is changed from granite to what some people call vein granite, or it is vein and mineralized rock.

(Testimony of Samuel Barker, Jr.)

When it becomes mineralized it becomes a portion of the vein, or ore.

[498] I know of instances where fissures occur in those aplite intrusions where the walls are aplite. I have seen a number of the silver mines to the west here where they have both hanging and footwalls of aplite, the vein being composed of quartz, iron oxide, manganese oxide at the surface, and clay and altered aplite.

Q. And do you know whether there is any difference between granite and aplite, so far as being affected by mineral solutions and suffering alterations is concerned?

A. Well, that is a theory that I have not been able to prove or disprove particularly. There are places here that it has been said that where the copper veins have passed through dykes of aplite, that the vein contents, as far as copper is concerned, are very much poorer. I have seen portions underground where the very richest portion of the ground was right alongside a very large dyke of aplite. For instance, the ten hundred foot level of the Mountain Con,—the best bunch of ore I saw in that mine,—the largest and richest ore body in the Mountain Con mine, existed east on this ten hundred foot level, and right alongside of it was a very large body of aplite. The silver mines to the west have produced millions of dollars in gold and silver, and they are between aplite walls,—they are in aplite. It did not seem to disseminate the rich mineral contents in those cases.

Q. And take it in the case of those aplite intru-

(Testimony of Samuel Barker, Jr.)

sions, where they become the walls of the fissure, do you know, within the province of your experience, whether there is any difference between aplite and granite, so far as this mineralizing water getting through there is concerned?

A. No. I have never seen any vein underground that would have less mineral contents because of the coming in contact with an aplite dyke.

The WITNESS.—I have in my experience encountered chrysocolla; in the eastern portion of this district I have; and also cuprite, that is also found in the eastern portion of the Butte district. I know of chrysocolla on the west side, right south of the Parrot mine,—southwest of the Parrot shaft; I have samples of it. (Witness produces samples.) That is vein material that was originally granite [499] and it has been replaced by copper solutions, so that some of the copper in that is now chrysocolla. I obtained this sample under consideration about one hundred and fifty or two hundred and fifty feet south of the Parrot vein, and about three hundred feet southwest of the Parrot shaft.

(Sample offered and received in evidence and marked Defendants' Exhibit 75.)

The piece of rock you now show me I obtained about four hundred feet west of the Parrot shaft, from one of the dumps. The rock itself is a straight granite. It is not mineralized. The bluish green material on it is copper sulphate. I brought that for the reason I wanted to show the difference between the painting on the granite and the replace-

(Testimony of Samuel Barker, Jr.)

ment of the granite. This green coating is what I call the painting; the granite is in an unaltered condition.

(Sample offered and received in evidence, and marked Defendants' Exhibit 76.)

I took sample 75 from its place in the rock. I took it from under an excavation made for the foundation of a dwelling-house. It was south of the limits of the Parrot vein as worked underground, but it is a portion. If it extends over to the Parrot vein, I should say it was a portion of that Parrot vein. There is nothing to prove now that it does, but being alongside such a large fissure, I should think it would connect and be a portion of the Parrot vein. You can find the same thing south of the Parrot ore house, in the big railroad cut that is there.

Q. So that you would say then, in the light of your experience, that it is a condition that is not peculiar to the east side as contradistinguished from the west side.

A. No. I could find the same thing on both sides, but the evidences have been more or less destroyed as you go east up the Anaconda hill.

Q. Mr. Winchell, when testifying here, called our attention to marked characteristics distinguishing the mineralization of the east side, which would refer to the territory adjacent to the ground in controversy, and the Butte Hill. Do you know of any marked characteristic between the two territories?

[500] A. I find the gray granite on both sides. I find aplite on both sides. I find rhyolite on both

(Testimony of Samuel Barker, Jr.)

sides. I find quartz porphyry on both sides. I find a very little manganese, especially on the Butte and Boston placer. There is a great deal on the west side. There is a little in some of the copper veins on the west side.

The WITNESS.—I find veins on both sides. I should say the veins on both sides were mineralized from the same source. Of course, the veins on the east side, as far as developed now are not as large as those in our worked Butte district.

Q. And do you know of any reason why it is that the development of the territory on the east side is not more pronounced than it is?

A. To me, one very good reason is that the Anaconda Copper Mining Company has an immense territory on the west side, a portion of which only is developed. They are getting enough copper out of that district to more than supply demands. They have also an immense territory on the east side. In fact, right adjoining this ground. There would be no use in them spending money to determine whether they had big copper mines on the east side now, because they have enough mines and enough workings from which is produced all the ore that they can handle at present. If they did open up mines in that territory on the east side, they would have to keep them in repair and timber, and keep the water out at a very large expense, and again to a large extent the whole of the eastern district, outside of the ownership of the Anaconda Copper Mining Company, is almost individual in its ownership,—that is, there

(Testimony of Samuel Barker, Jr.)

are several people owning in one claim and it is a very hard matter to get people together that have ownerships in these claims, so that they could be under the control of one company to work them.

Q. Take it in the case of the copper mines of this district, what do you say as to whether or not they commenced to be paying properties from the surface?

A. They did not. For instance, the old Mountain Consolidated Mining Company, owning the Mountain Con up here, was owned by S. H. Clark and others. Mr. Clark went broke. They sunk a shaft down, I think it was five hundred feet deep, and ran a cross-cut and found [501] the ore,—found the vein. At that time, it was not rich enough to make a paying mine. They had shipped some of the oxidized ores near the surface. That mine was filled with water a great number of years. I helped to make the first survey of that mine when it was unwatered when Mr. Daly gained control. Again, the Anaconda Copper Company owns the High Ore mine. The Bell was adjacent to the north. They took an option on the Bell principally because it would protect their extralateral rights to the north. The Bell was non-productive for a number of years. It took a long while,—I will say longer in the old days than now with modern machinery, to bring a mine to the front. And also the High Ore shaft on the Belk claim, is another instance. For years and years that claim was,—well, the shaft was sunk, workings run therefrom and there was no production of ore, in fact they said there was no ore over there, but it has produced

(Testimony of Samuel Barker, Jr.)

thirty thousand tons per month since that time.

These mines that I have spoken of have turned out to be very, very fine productive mines. There are very few of the copper mines in Butte that paid from the grass roots. You see there are only three or four that did pay from the beginning.

The difference between oxidized and sulphide ores is this: The oxidized ores come from near the surface. The sulphide ores come from below the point which has been termed the permanent water level. Some of the mineralization in the upper or oxidized regions are oxides of various metals, particularly iron oxide. Below we encounter the sulphides; that is, you have iron sulphide, which would be pyrites instead of iron oxides. You have copper oxide in the upper region, in the oxidized zone, in the chrysocolla, and below you would have the copper sulphides, such as copper glance and covellite. You could not suggest any particular depth at which you would encounter the change from oxide to sulphide ores. For instance the Mountain View is several hundred feet from the surface to the sulphides. In the Anaconda, it is about three hundred and forty. At the Gagnon it was practically at the surface. In the silver mines it ranges from nothing to several hundred feet. In the case of the copper mines you find your values, the copper contents, in the sulphide region, except where you would have chrysocolla or copper oxide. Cuprite is copper oxide.

[502] I think I can say that I have a very intimate acquaintance with all the ground surrounding

(Testimony of Samuel Barker, Jr.)

this ground in controversy to the south and to the north and to the east. And having in mind the mineralization that you encounter in the cross-cut from the Mullins tunnel to the Hornet discovery shaft, I should say there is not hundreds of acres of ground around there mineralized like that. I know the country along what it known as the Continental Fault, all the way to the Butte and Bacorn and to the south. I have examined that ground carefully. I have been over it numbers of times and I should say that it would be erroneous to say that hundreds of acres of the ground in this vicinity was colored green.

In the first place as to a vein, I think that when one defines the term vein, it should be in reference to the particular place where that vein is found, because you have so many different kinds of rocks in which veins are found, and so many conditions surrounding the veins in those rocks, that it is impossible to give a definition that will cover every situation.

Q. We do not want to encumber the record with definitions, but take the Butte conditions, and having in mind its mineralization, and the conditions existing here say in 1891, give us your definition of a vein.

A. A vein is mineralized rock in place such as would justify one in spending time and money in prospecting the same.

In my examination of the ground here I have found evidence of leads traversing this ground. I found at least two veins. The north vein traverses the northern portion of this Butte and Boston placer,

(Testimony of Samuel Barker, Jr.)

and its strike is very nearly east and west, a little bit I should say north of west. It has a peculiar characteristic in that it dips to the north. Most of the veins in the Butte camp dip to the south. The south vein I find in the Hornet tunnel and the various workings therefrom, or tunnel No. 34, shown on Exhibit 1; that has a northwesterly strike and dips to the south.

Taking up this northerly lead and referring to shaft 21, I find there iron oxides, altered granite—that is, altered country rock,—clay, some minute particles of quartz, and I also found direction for some small seams which I think are iron oxides, that direction being [503] easterly and westerly and with a northerly dip. I say there is a vein there. There is absolutely no question or doubt in my mind about it. I find in the country to the east of there the gray granite and the aplite as the enclosing rock, which is absolutely dissimilar to the material I found in the bottom of this shaft. With reference to the bedrock as it appears in the shaft, you encounter this material immediately underneath, and but a few feet from the bottom of the shaft; that is, the shaft has only pierced the bedrock for a distance of two feet. I did not see any walls in that vein.

Going to the east, I next found evidence of a lead in the south cross-cut from tunnel No. 30, at the face thereof. I find the aplite there to be very much altered, although the material there is not the same as I find in shaft 21, which we have just been speaking of. Of course, tunnel No. 30 is to the north of

(Testimony of Samuel Barker, Jr.)

tunnel 21, and it is possible that that would mark the extreme northern limit of that vein. And a peculiar condition must exist there, for the reason that in tunnel 30 you find the bedrock only seven or eight feet below the surface of the ground to-day; only a hundred feet to the west of there in shaft 21, it is over a hundred feet to the bedrock. There must have been a cliff there sometime,—something of that sort, although it has not been developed yet.

Take it further to the west, in the Pittsmont ground, there must be another drop, because in the Pittsmont shaft it was six hundred and twenty feet to bedrock. The surface of the bedrock is not uniform; on the contrary, it is very much broken. This difference in elevation at the two points would have the effect of throwing the vein to the north as you go west.

There has been some mineralization of the aplite there, because the rocks show it. It has progressed so far that some of the material in the face of that south cross-cut is certainly vein matter. It is silicified and altered to the extent that I would deem it vein material. There is nothing there to enable me to tell the strike of the vein there, or the course of it. The aplite has two marked directions there, one easterly and westerly and the other northerly and southerly. That is particularly shown in the north [504] cross-cut,—the northerly and southerly line in the aplite,—and shows it to be dipping into the hill, that is dipping to the east.

I find a vein in shaft No. 1. It is a very small

(Testimony of Samuel Barker, Jr.)

vein dipping to the north, and has a northwest strike. I obtained a sample of the material I found in shaft No. 1. (Witness produces sample.) I obtained this sample from the north side of that shaft, and near the bottom, although I traced the vein from the bottom up to a point that was less than a foot below the wash, finding the same material that I saw here, and I also noticed the same material in the streak that was testified to by Mr. Winchell called the hard rib on the south side, but nearly to the same extent that I find it in the streak on the north side, but I did find some little of this material. This stuff is called iron oxide, quartz, probably, some altered granite which has been subjected to a vein mineralization. The country rock in the neighborhood of that shaft is granite. I obtained rock from there for the purpose of showing the distinction between this lead matter and the country rock. (Witness produces sample.) This is a piece of granite which has been slightly subjected to mineralizing influences.

(The material from shaft 1 offered in evidence and marked Defendant's Exhibit 77; the piece showing country rock also offered in evidence and marked Defendants' Exhibit No. 78.)

There is sufficient of the lead in shaft No. 1 to determine its strike. There is at least three feet in length of this vein shown on this strike. You find the granite on either side of the vein, but they are not smooth, slick walls. The mineralization there is irregular, but it has a dip and strike. That can be

(Testimony of Samuel Barker, Jr.)

easily seen. I do not think those are the permanent walls disclosed in that shaft. I think that this small vein is a portion of this north vein that we are discussing.

Q. Now, would you say that the vein evidences are such there in that shaft, so that a reasonable mining man would be justified in locating the ground and spending his money in its development?

Mr. SHELTON.—Objected to as immaterial.

A. Yes, sir. Finding such a streak, I would say is would be worthy of development.

[505] The WITNESS.—Going back to the cross-cut from tunnel 30, where I said I saw some evidence of a vein, I obtained some of the material for the purpose of exhibit. I obtained a sample from the south end of the south cross-cut from tunnel 30. (Witness produces sample.) This sample was originally ap-lite, I should say, but it is very much altered indeed. It has been subjected to some slight vein mineralization. Anyway, there have been solutions attacking its original texture and constituents.

(Sample offered in evidence and marked Defendants' Exhibit 79.)

There was sufficient exposure of the lead in shaft No. 1 so that I could tell the dip. I saw it for a vertical depth of six or seven feet at least. I remember I had to climb up the shaft to see the end of it. The dip was about eighty-five degrees to the north.

I did not see much evidence of a vein in shaft No. 2. I found a north and south dyke of ap-lite

(Testimony of Samuel Barker, Jr.)

however. I did find that the aplite was very much altered and I took a sample from there (producing sample). I characterize this as an altered aplite. I think that a miner would call that vein,—any miner that would find that material such as I exhibit here coming from shaft No. 2 would say that he had a vein. There is some good quartz in it.

The piece of rock you hand me is a piece of aplite that is unaltered, showing its whiteness that I have referred to this morning as being one of the marked characteristics of aplite.

(The altered aplite is offered in evidence and marked Defendants' Exhibit No. 80; and the unaltered aplite is offered in evidence and marked Defendants' Exhibit 81.)

I found excellent veins in the north cross-cut from tunnel 31. I do not know of any distinction in the miner's lexicon between a vein and a veinlet. A vein is a vein, no matter how large it is. I would judge a veinlet to indicate a small vein. I would call these veins disclosed in that north cross-cut. I think it is one vein there. I think they will join on dip as depth is obtained, for the reason that as you go east in the main tunnel you find these two streaks to be one; that is, they have joined together on strike.

At a point twenty feet northerly from the center of the tunnel, I found what I should say to be the first aplite in that cross-cut, [506] and the first evidence of the smallest green coloring. I had to look carefully indeed before I found the green dis-

(Testimony of Samuel Barker, Jr.)

coloration. At twenty-three feet from the center of the tunnel, I found a small streak one or two inches wide, dipping to the north, with a little more of green discoloration. At twenty-six feet I find the footwall of the vein. I find fifteen inches of excellent vein material, better in fact than ninety-nine in a hundred of the claims I have seen or examined or located. At thirty-three feet, I find another seeming wall, but I think, as I have said before, it is a portion of the same vein, but it is more highly mineralized on the east side it shows,—and a few feet in width,—excellent indeed. On the west side I find three feet, and at the bottom, on the northwest corner of that cross-cut, I find the vein still there and it looks as if, with more development, that is, as the cross-cut is run farther to the north, it will be even wider than that, although the material immediately above it is gray granite. I should call it quite a wide vein. I think the two rich streaks there are merely in the same lode. I did not take a sample and have it assayed, but from my knowledge I would say it is commercial ore. I have referred to the cross-cut as it now exists. Having in mind the footwall that I designated as such in the cross-cut, and extending the lead to the face of the cross-cut, the vein would be there ten feet wide. I am uncertain as to whether or not the hanging-wall is disclosed at the face of that cross-cut or not. That cross-cut shows that ore is still existing in the bottom, on the west side of the face, and with further development, there might be a wider vein found

(Testimony of Samuel Barker, Jr.)

there than I have already given. From the examination of the mineralization disclosed in that cross-cut, and I looked at it very carefully indeed, the mineralization does not disappear rapidly from the top of the cross-cut to the bottom. I heard the statement made by Mr. Winchell with reference to that. I thereafter made an examination, making that one of the particular things to look at, and instead of that, I find the vein mineralization as great at the bottom as it is at the top. Of course, you might take some little portion of that vein and find that the mineralization is not as great at the bottom as it is at the top, and on the contrary, you might find another [507] streak where the mineralization is greater.

I was able to determine the strike of that lead as disclosed in the cross-cut. I took the strike of the footwall and I took the strike of the mineralization; that is, the streak of mineral from there to the north, within the footwall. The footwall I found to have a strike of south eighty degrees west, dipping eighty-five degrees to the north. The streak to the north, that I took the dip on, had a strike of north eighty-six degrees west, and the dip was eighty-five degrees to the north. Right near the entrance to this cross-cut, there is fault material having an east and west direction. As you go into the tunnel you find that dips to the south. That fault material has no connection with the lead I have been speaking about until you get further to the east, where it has slightly thrown the vein around from its true strike.

(Testimony of Samuel Barker, Jr.)

Both the hanging and footwalls are granite on each side of this vein. The vein itself is so terribly green that anyone could see where either wall would be.

Q. Did you notice there in this vein, parallel stringers separated by granite walls? You heard Mr. Winchell testify about that, didn't you,—a lot of granite separating the veinlet material?

A. No, sir. I looked very carefully and the granite between the two veins is very much altered. It is a gray granite, and in places, if you did not have an intense mineralization there, you would call that vein. It is slightly green in places. You see these two streaks are so close together, only four and one-half feet between the two,—undoubtedly come together in depth, because the dip is practically the same and they are thrown together as you go to the east by the fault I have mentioned as shown near the entrance to this cross-cut.

The WITNESS.—A fault is the plane upon which one mass of ground moves on another; that is, the plane of dislocation of the same piece of ground. Subsequent to the dislocation, there might be mineralization along the plane of dislocation, and if the material is not particularly hard, it would result in a great deal of ground up material on either side of the crack. Therefore, that could be mineralized and then it would be a fault vein. Now, when a fault encounters a vein, the vein is more or less dislocated; that is, the vein on one side of the fault is not in what geologists would say in [508] juxtaposition.

The Continental fault which has been referred to

(Testimony of Samuel Barker, Jr.)

here, is some distance east of tunnel 31. It exists in the claim known as the Birtha on this Exhibit No. 1. It is quite a large fault fissure, but I have never seen the walls of that fissure, so I would not be able to tell how wide it is. Its direction is northerly and southerly.

Leaving this cross-cut and going farther into the tunnel, you encounter this lead again where the tunnel takes its northeasterly direction, and where it has a north sixty-seven degree east strike. That is about thirty-seven feet from the north cross-cut. I find the fault in the back, or roof of the drift and down for some little distance, but the vein is dislocated near the bottom, where you can see this fault material coming in contact with it. You can trace the vein east from that point a distance of fifteen or twenty feet, maybe twenty-five feet; then it is intercepted by a fault which has a northwesterly and southeasterly strike, dipping to the east. The vein is found on the west side of that fault up to where it is intercepted by the fault plane on the east side of the fault.

There is a streak dipping to the north in the face of this tunnel. If you look carefully at that, you will find some rounded particles in the walls of that fissure,—very small ones,—but that would suggest movement, and therefore, I would say that was a fault fissure, and although not mineralized it would come within the term vein. That is at the face of the tunnel. The strike of that fault fissure there is north eighty degrees west, having a dip fifty de-

(Testimony of Samuel Barker, Jr.)

grees to the north.

Q. I will call your attention to Complainant's Exhibit 17, and will ask you whether or not the condition of that lead as disclosed to you there, is correctly represented upon that map as to strike and width.

A. No, sir, because the cross-cut has been extended to the north from where it is shown on Exhibit 17, disclosing another streak of vein there three feet in width. Also I think the mineralization is farther south than shown in this exhibit,—in the tunnel east from the cross-cut.

[509] Q. And having in mind the lead as it exists there to your knowledge, affected as it is by those faults, I will ask you whether in your judgment this red here on this map correctly represents the strike of that lead.

A. It does not. For instance, it shows that the vein is entirely outside of the limits of this tunnel where it is struck with the fault. Well, now, you can see where it goes up against the fault in that tunnel now.

Q. And in what respect is this strike as disclosed on this map, Complainant's Exhibit 17, erroneous in showing too much of the strike to the north or in showing too much of a strike to the south?

A. The true strike of that vein, I say is north eighty-five degrees west. The reason that the vein is shown in the tunnel the way it is on Exhibit 17 is from, I think, not knowing the absolute conditions there, and also because of the influence of that fault

(Testimony of Samuel Barker, Jr.)

that I spoke of, which is almost parallel with the vein itself.

The WITNESS.—This sample of rock I now produce I obtained from the point in tunnel 31 where the vein is first exposed by the tunnel that is east of the cross-cut. It shows that it contains copper. One of the real reasons why I brought that sample was to show what Mr. Winchell calls the interlocking of quartz crystals in veins. Mr. Winchell said that that vein was entirely aplite. I say that it is typical vein quartz, interlocking exactly as Mr. Winchell said it would in real veins.

(Sample offered in evidence and marked Defendants' Exhibit 82.)

The interlocking crystals are visible to the naked eye; they show in the center, and on both the right and left sides of the center. They almost show a standard structure of quartz in this rock.

I obtained this other sample which I now produce directly east of the east boundary of the fault that we have spoken of as running northerly and southerly in this tunnel. It is shown outside of any vein at present. The workings do not disclose any vein there. We have a statement of Mr. Winchell that all of that material there is stained or painted. This sample is not stained or painted. I do, however, find intense staining between the fault lines as shown on Exhibit 17, the north and south fault, but to the east of that I find [510] none, nor immediately adjacent to the east side of that fault, I find none. Faults are one of the best agencies for

(Testimony of Samuel Barker, Jr.)

carrying mineral waters. It would be very common, indeed, to find mineral mineralized in the neighborhood of a fault, especially in the Butte camp. I took this sample from several feet east of that fault; I should call it a portion of the country rock.

(Sample offered in evidence and marked Defendants' Exhibit No. 83.)

The WITNESS.—That sample is gray granite; the black stuff on it is mica.

Referring to Defendants' Exhibit 82, I would say that it is highly mineralized. I have not discovered any cuprite in that piece; the green is chrysocolla. Chrysocolla in its pure state carries somewhere around thirty-six per cent copper, I think; cuprite is about eighty-eight and a half per cent.

I got this from the dump of the Bullwhacker, showing also how quartz and chrysocolla interlock in the vein. The Bullwhacker is immediately to the south of the Butte and Boston placer.

(Sample offered in evidence and marked Defendants' Exhibit 84.)

Q. Now, was there any further disclosures that came to your notice in this tunnel, before we leave it?

A. The small cross-cut running to the south, near the face of tunnel 31, there shows more or less of this same discoloration, and a small streak of very highly mineralized material, containing cuprite and chrysocolla. Its dip was to the north, and the strike easterly and westerly. There is no connection there now between this and the lead I observed in the first cross-cut to the south. It will require further work to

(Testimony of Samuel Barker, Jr.)

prove the continuity of these several streaks. I also made an examination of this cross-cut to the south, a little east of the cross-cut to the north. I heard Mr. Winchell say there was no aplite in that cross-cut to the south. My first notes made on the ground showed that there was aplite there, and I went back to look at it carefully, and there is a great deal of aplite there. He said he counted as many as fifty, and then stopped, of little harder streaks in the granite, but he said there was no aplite there, and thought that was twenty to twenty-five feet below the wash. [511] The wash is shown in the top of that dip, and there is a great deal of aplite there. That is the reason I made another examination of it. The aplite appears there intrusively. You find the granite on top of the aplite. The aplite is an intrusive sheet there. It is nearly horizontal.

There is one thing further that struck me with reference to this tunnel 31. That was the mineralization between the north and south fault,—very green indeed, and none on either side of it, practically, until you got near the face on the east side, and that seemed to have been probably brought about by the east and west fissure, that is more highly mineralized than that little cross-cut near the face. To me it seemed that the solutions would flow along the fault lines, or along these highly mineralized streaks containing chrysocolla and cuprite.

I went into the Rabbit Discovery. I found a vein there. It was dipping to the north, and the strike was a little to the northwest. I found the shaft had

(Testimony of Samuel Barker, Jr.)

been cleaned out along the sides to the bottom, and could see the new wash material covering both the old wash material and the rock in place. Below the wash, there was a little drift, or a slight excavation, made partially in the wash, and partially in the solid granite to the west, and I found there a little streak of green material, which I picked into, and I brought a sample here which is marked No. 54, I believe. It was shown Mr. Winchell. I took the pick from the workmen there, and I dug down on it, and found it had a dip, and I traced the vein material from the east side, or from the face of the little drift right over to the east side of that shaft,—that is, I did the picking myself to see whether that vein did extend across the shaft, and it did. The Rabbit Discovery is about twelve feet deep; not more than two or three feet of the shaft is in bedrock. I brought no sample from there except No. 54, which was introduced, showing chrysocolla, and what I thought was the black oxide of copper, tenorite. I say I traced that lead by the work I did there across the bottom of the shaft. In the sinking of the shaft there, the lead would be exposed. They would have to take some of it out in getting through the two or three feet of bedrock that I say is exposed there. I did not figure [512] out any walls. I merely traced it across the bottom, and saw that the mineralization was from six to eight inches in width; that is, it was brownish in color, oxidized, and the material on each side was the granite. I did not see the vein exposed on the dip at all. There is enough work there to prove the width of that streak.

(Testimony of Samuel Barker, Jr.)

I also went into shaft No. 9. In the cross-cut north from this shaft, at the twenty-five foot point, there is a vein exposed. It is badly mixed up, though, and on the east side it seems to be wider than on the west side, but from the faulting that I find immediately underneath, I think that has been the agency which has broken up this vein. The fault at that point has to do with the displacement of the vein. Wherever the fault intercepts the veins out there, the vein is broken,—dislocated,—but from the sample I got there I would say there is a good vein there. I have the sample here. (Produces.) I obtained this sample from the cross-cut at the twenty-five foot level, in the No. 9 workings, beginning at a point about five feet north of the shaft. I should say that the material of this sample was vein material. For instance, I find chrysocolla, and I find quartz and find altered granite. Some of it is vein filling. It is all mineralized, though, there, all as the vein material.

(Sample offered in evidence, marked Defendants' Exhibit No. 85.)

There was not sufficient disclosure of vein at this point so that I would be able to give its strike and dip. I could not give you its strike, because it is too much broken. I can on the east side, where it did not show as much breaking up. On the south side it showed a dip to the south of eighty-five degrees. On the west side where I could follow a seam in the [513] vein, it has got a dip of eighty-two degrees to the north. In the shaft itself, where the

(Testimony of Samuel Barker, Jr.)

lagging had been taken out from the east side very recently, since I made my first examination in there, it shows quite a good deal of mineralization,—that is, these harder ribs show a dip to the north and they run up and down the shaft. They are not put in there in all directions at all, but they are parallel with the vein fissure,—that is, easterly and westerly, and they have a northerly dip. As to these being honeycombed lines that Mr. Winchell talked about the other day, reaching to the master joint in granite formation, they are not joint cracks or master joints in the granite at all. As to there having any connection with a lead, there has not been work enough done there to prove or disprove anything of that kind. I think I have explained all the workings disclosed in the No. 9 shaft, although I find a small amount of aplite in the cross-cut at twenty-five feet, and the wash is about ten or eleven feet deep, I should say, there.

The other workings in the neighborhood of the Rabbit Discovery are simply surface openings, as I testified to this morning, and as I remember it, they are all filled now.

I stated that I desired to make a correction in my testimony in reference to the Vesuvius shaft. In my testimony this morning I said it was twenty feet from the top of the shaft to the old ground—twenty feet from the top of the shaft to the bottom of the shaft, and my notes read twenty feet from the old ground to the bottom of the wash and thirty-two feet to the bottom of the shaft. Therefore, from the

(Testimony of Samuel Barker, Jr.)

collar, the total depth of that is forty-two feet, instead of thirty-two feet, as I testified this morning, and the wash is thirty feet below the collar of the shaft. That shaft is ten feet in the air.

Q. Now, before taking you outside of the ground, and simply confining your observation entirely to the openings and to the lead disclosures in the openings, as you have testified here, what would you say as to whether or not the lead or the [514] vein in those different openings on this ground in controversy is one and the same or they are different leads?

Mr. SHELTON.—Objected to as calling for a mere conjecture and incompetent.

A. From what I have seen on the ground, I say that they are one lead,—that is, they are on the same system. I have not been on the ground in the Pittsmont. I have seen from the working shaft, I have seen them hoisting ore from the working shaft. I have seen maps of the workings of the Pittsmont, shown me by Mr. Williams.

It is not the case that free access to those mining claims is accorded to anyone, so that he may go into the mines and examine the underground workings. Unless you have business underground, why the management would surely keep you out. I stated that I saw ore hoisted on the Pittsmont ground from a shaft there. I mentioned that only to show that ore was being taken from somewhere underground within the ownership of the Pittsmont Company. I do not know of quartz mines being salted to the extent of seven hundred tons a day. Mr. Williams,

(Testimony of Samuel Barker, Jr.)

who is the engineer for the Pittsmont Company, showed me his map and thereon I saw, on the twelve hundred foot level, a vein which had continuous workings for three thousand feet, running in a westerly direction, just probably the west end would not be more than fifty feet north of the east end. On the ten hundred there was the same workings on the same vein and also on the eight hundred, but not as extensive though as on the twelve hundred. The dip was to the north. There is no evident connection between that lead as shown upon that map and this northerly lead as it traverses our ground.

Q. Well, in the matter of location, this lead extending and pursuing the course that it pursued as you know it upon our [515] ground, if projected into their ground, where would it be with reference to this lead that they have there?

A. It would seem to me to be the same vein.

Q. And is there anything in the Vesuvius workings as they were disclosed there, that would enable you to establish any connection with the lead there, if one exists, and this lead that you have been projecting through the ground in controversy in this case?

A. There is no direct connection. Considering the existence of faults there, I think the vein is dislocated. It is very possible, though, that the vein in the south end of the south cross-cut of the Vesuvius is a portion of the vein in the ground in question that we are talking about,—the north vein.

You encounter the south vein in the Vesuvius

(Testimony of Samuel Barker, Jr.)

about twenty-six feet south of the shaft. The vein there dips to the north and has an easterly and westerly strike. In the west end it shows at least six inches of oxidized material and some of it is discolored green. Going to the east, it shows more of the green copper in the vein. At the bottom in the east end of the drift, it shows better than it does at the back at the same point. It can be traced continuously, though, for a distance of twenty-three feet. Now, I find going through the shaft, a fault, and there is also another fault shown in the north cross-cut, or it is a fracturing of some kind, possibly might have dislocated the vein system there. That is on the east side. It shows a slip there, and it also shows motion on the walls. The nearer you get to the continental fault, the more numerous are these north and south faulting planes, which lay parallel with the continental fault. Seven and a half feet south of the shaft, there is a small streak that is vertical. It has chrysocolla in it, and in the north cross-cut, I have two streaks noted there. They are small though. Both of [516] them have a north dip and an easterly and westerly strike.

Q. Is it not possible, Mr. Barker, that you are mistaken about those leads there, that what you are testifying about is simply what is known as master joints in the granite, with lines of cleavage in the granite running in every direction to the master joint, as shown by Defendants' Exhibit No. 55?

A. No, I call it a vein. I have a sample from there, if you care to see it. (Produces sample.) I

(Testimony of Samuel Barker, Jr.)

obtained this sample about the middle of the exposed portion of the vein. I should call it a vein material; it certainly is mineralized. Where I got it the vein is about ten inches in width. I do not recall any master joints that I have ever seen of that width. I should not say that this fissure where I obtained this material was a master joint of the granite rather than the vein. I should say it was a vein. For instance, there is one piece of this shows motion. There is one portion of it that is very slick and shows that it is harder and there has been motion in that fissure. You do not usually encounter this motion in those master joints that Mr. Winchell testified about. They are infinitesimal in thickness, as I understand it. There is no motion at all. They are just cracks in the granite. The piece that suggests motion is the piece you now have.

(Piece offered in evidence, marked Defendants' Exhibit No. 86.)

There is no other piece there that shows motion.

(Balance of sample offered in evidence, and marked Defendants' Exhibit No. 87.)

In the testimony I have given in reference to tunnel No. 21 I spoke about some faults there. Where there is a fault is because of the motion. I obtained samples in this tunnel for the purpose of showing that motion did take place. I took two pieces of rock from the vein where it is first encountered [517] by the tunnel, to show that there is motion along the walls of that vein, or within the vein itself. Mr. Winchell testified that there was abso-

(Testimony of Samuel Barker, Jr.)

lutely nothing to show that there was motion in this vein. (Sample produced.) These samples that I have were brought for the purpose of showing motion. They were obtained in Tunnel No. 31 just east of the point where the tunnel strikes the vein. The hardness of a portion of the rock, and the striations and the slickness suggest motion. The lines of motion show there in one piece two different directions,—shows a curved motion. The other piece,—it seems to be all in one direction.

(Samples offered in evidence and marked Defendants' Exhibit No. 88.)

With regard to the southerly lead, and the evidence of mineralization in the Hornet discovery shaft,—immediately before bedrock was encountered, I find on the north side of that shaft, a small streak of high mineralization, containing cuprite and chrysocolla. That streak has an easterly and westerly strike and a dip very flat to the north. That streak will, on its dip, go into and become a part of what is called the Mullins vein. Farther down in the shaft, I find at least two other of those same highly mineralized streaks having an easterly and westerly strike and the same northerly dip. At the bottom of the shaft I find the brown material, which is good vein material, dipping to the north, and also having,—or it has a flat dip to the north, with an easterly and westerly strike. The shaft itself, where exposed now, is quite green,—that is, there has been mineralization or replacement in the granite. I say that these rich streaks, having a trend to the north,

(Testimony of Samuel Barker, Jr.)

become a part of the Mullins vein, because it is almost continuous, excepting for the slight break between the Hornet tunnel cross-cut and the cross-cut at the bottom from the Hornet Discovery,—shows that it has an east and west strike and flat [518] dip, and does go over and join onto the vein that has been talked about here and been called the Mullins vein. I first encountered this mineralized streak in the shaft within six inches of the point where the wash and the solid country rock is encountered. As to the mineralization on the north side of the shaft being continuous, the same kind of material exists from the point where bedrock is reached to the bottom of the shaft, except for these richer streaks. I should say that that material was well impregnated, well replaced with copper, because I took a sample beginning at the bottom of the Hornet discovery shaft along both the east and west sides of the cross-cut northeasterly therefrom, and I got a very fair assay from that material. I had it assayed by W. R. Hocking; I have the assay return here. (Produces paper.) I might say, in taking this sample, I was very careful indeed to exclude every piece of this highly mineralized chrysocolla and cuprite that you find encountered in this north cross-cut. In fact, I took the worst material that I could find. This sample was taken from at least eighteen feet north and south,—that is, from the north side of the Hornet discovery shaft, up to within about a foot of the vein that is shown at the north end of that cross-cut. This sample was turned over to Mr. Hocking by me,

(Testimony of Samuel Barker, Jr.)

and designated No. 2, with a slip attached, showing where it came from, with directions to assay for copper and silver, the copper to be determined electrolytically. The returns given me by Mr. Hocking are three-tenths of an ounce in silver and one and seventy-one hundredths per cent in copper. I also took a sample of the brownish streak that I found in the bottom of the Hornet discovery shaft and west therefrom, and took it to Mr. Hocking and had it assayed. I obtained that sample by thoroughly cleaning off the material there, and picking off the surface, and then taking a sample underneath that, so that I would have [519] the material only from this streak, and it was taken for a distance of four or five feet in an easterly and westerly direction. None of this chrysocolla was visible where I got this sample No. 1.

(Sample marked Defendants' Exhibit No. 80.)

Q. Now, Mr. Barker, having in mind the mineral conditions in the Hornet discovery as they were disclosed in that shaft there, what do you say as to whether or not they were such that a reasonable mining man would be justified in locating the ground as a mining claim and exploiting it?

By Mr. SHELTON.—That is objected to as immaterial.

A. Well, if a man did not locate it, I should say that he was not in his right senses. That is one of the nicest showings I have seen.

Q. And taking you back a moment to the shaft No. 2, on the north lead, what would you say as to the

(Testimony of Samuel Barker, Jr.)

disclosures there,—whether a mining man would be justified in locating the ground as a mining claim?

By Mr. SHELTON.—The same objection on the same ground.

A. Well, to a miner that might appear to be quartz, considering the direction it has there, I would not say he would be justified—that is, shaft No. 2 on the Hornet lead.

Q. You think, in your judgment, the showing there would not be sufficient to justify a man locating the ground, exercising the reasonable prudence that a mining man ought to exercise where it involves the expenditure of his money and his time?

A. He might be justified in locating there, but he would locate a vein north and south instead of easterly and westerly,—that is, the indications would point that way to me.

Q. Now, then, take the Rabbit discovery,—what do you say as to whether or not the conditions there are such that a reasonable man would be justified in locating that ground?

By Mr. SHELTON.—The same objection on the same ground.

[520] A. Yes, sir, I would say a man would be justified in making a location, if he found what you do see now in the Rabbit discovery shaft.

Q. And what do you say as to whether or not a man would be justified in locating the ground with the exposures as they exist in the No. 9 shaft?

By Mr. SHELTON.—Same objection, same ground.

(Testimony of Samuel Barker, Jr.)

A. He certainly would be justified in making a location on what he found there.

The WITNESS.—I made an examination of the Mullins tunnel, to determine whether or not there was any lead exposed there. There is a small streak of more highly mineralized material, in places at least, than you find in the surrounding rock, both on the north and south sides of that streak.

As to the Mullins shaft, I should say that the northerly and [521] southerly boundaries of that shaft do not constitute the foot or hanging-wall of that lead. If Mr. Winchell said that the vein between walls as it was exposed in that tunnel was four feet, he did not look at those walls closely enough and he was mistaken. The very widest place that I could find in that tunnel between walls is two feet, and that is just east of the point where it, in the back, gets into the wash. A little bit east of that, where the vein is dislocated for a distance of one foot, it shows a throw to the south. The vein is about one foot wide, but nowhere east of that do I find more than eight inches, and in places I do not find any distances between the walls. I find that the hanging-wall is the same as the footwall. I am speaking of the well-defined walls of the lead, that Mr. Winchell testified to as being two to four feet apart. I prepared a map showing the facts. (Produces map.)

(Map offered in evidence and marked Defendants' Exhibit 90.)

This is the map that I prepared. The parallel

(Testimony of Samuel Barker, Jr.)

black lines running east and west represent the outlines of the tunnel. The shaded portion represents the point of contact between walls and bedrock. The two vertical parallel lines represent the entrance to the tunnel proper. I have marked on this map "fault." There is a small fault shown just east of the bedrock, with an easterly dip and a northerly and southerly strike. The Hornet discovery shaft is also shown upon the map. The winze is at a point where the cross-cut goes from the Mullins tunnel over to the Hornet discovery shaft. The Mullins shaft is also shown upon the map, a portion of the shaft as it dips through this working, by those parallel lines. On the eastern portion of the tunnel I have marked a fault as shown upon the map. Beginning at the face of the tunnel and going to the [522] west, it represents the vein as I can see it between the walls, at the bottom of the tunnel, just west of the winze, where the vein is broken, I could not see the walls of the vein and the red marking just to the west of where the vein is broken shows its size in the top or back of that tunnel.

The hanging and foot walls of this lead are visible. In the bottom you can trace them off, excepting near the face of the tunnel where the vein goes into the material at the south side of the tunnel, and until you get the point marked fault, the vein is not visible again,—that is a distance of about six feet. At the fault the walls come together, and to the east of the winze they are very close together. The walls would bound this red as it is shown on this map. This map

(Testimony of Samuel Barker, Jr.)

is drawn to a scale; ten feet on the ground is one inch on the map. It is pretty hard to show a thin streak like that on a map. For instance, at the face I show that the vein is eight-tenths of a foot wide, and at the point five feet west one and three-tenths of a foot between these well-defined walls. Then where the vein is thrown by the fault it is pinched to a crack. Just east of the Mullins shaft, it is six inches wide between walls. Just east of the winze it is four inches, at the winze six inches, fifteen feet west of the winze one foot wide, in the back, twenty feet west, two feet wide, which is the widest part in the whole tunnel. I do not think that the walls of the lead there bounding that lead are the true walls of that vein; or that the northerly and southerly boundaries of the Mullins shaft are not the footwall or the hanging-wall of that lead. I say that because I can find better ore either on the foot or hanging side of that streak, and go down into the drift on this same streak below, I can find just as good ore outside of the well-defined wall as I find inside. The whole of the material between the Hornet discovery shaft and the tunnel to [523] the north is mineralized and I should say it was a vein; it is the same vein; the mineralization came from the same source. I have here a sample of brown material that I took an assay of, at the bottom of the Hornet discovery shaft. I would say that was vein material. (Sample produced.) I call that vein material; I obtained it just at the west side of the shaft and at the entrance to the drift that goes to the west.

(Testimony of Samuel Barker, Jr.)

(Sample offered in evidence and marked Defendants' Exhibit No. 91.)

I have two other samples. I obtained one from the dump at the Mullins shaft, and the other from the Mullins drift, which is just below the Hornet tunnel, about ten feet in elevation. The Mullins drift is the drift that runs easterly from the north end of the cross-cut, from the bottom of the Hornet discovery shaft. That drift would be on the vein, so called, referred to by Mr. Winchell. (Sample produced.) My object in obtaining this sample from the dump was for the purpose of showing that sulphides were encountered in sinking that shaft. I refer to the deep shaft,—the Mullins shaft. The samples that I produce here, in my judgment are sulphide ores; the material contains copper sulphides. I see no difference in these sulphides from the sulphides that are encountered on the west side.

(Sample offered in evidence and marked Defendants' Exhibit No. 92.)

This sample that I now produce was obtained from beneath the well-defined wall which Mr. Winchell testified was the footwall of the vein in this drift. My object in obtaining the sample there, was because Mr. Winchell testified that you would not find any ore outside of the well-defined walls of the vein, as shown in that drift. I call this copper ore. I think it is commercial, too. I mean by that that it can be shipped today at a profit.

[524] (Sample offered in evidence and marked Defendants' Exhibit No. 93.)

(Testimony of Samuel Barker, Jr.)

I should say it was from six to eight inches from the wall that I obtained this material. That point would be right against the wall of the working,—that is, the footwall of the working.

Q. Is there anything in the formation over there that would justify you as a mining engineer in saying that this lead matter represented by the red streak on Defendants' Exhibit 90, is different as vein material that you encounter in the cross-cut from the tunnel to the Hornet shaft?

A. Yes. Near the surface, the material in the enriched streak is brown and oxidized. As depth is obtained, it is of a darker green than the material found in the cross-cut spoken of. It shows that it is more highly materialized, excepting as to the streaks that you find which are also highly materialized in that cross-cut, but I would say that the whole material in that cross-cut is not of the same kind as found in this enriched streak. If it were, why we would not be on the witness-stand testifying about it. I have never seen such a case where all of the material within the boundaries of a vein was of the same character as to value or appearance. The backs and things that you see in the vein, or in the vein in consideration, are those things which you see underground in the productive Butte mines.

Q. And having in mind now the characteristics of the ore body existing in the cross-cut from the Hornet shaft to the tunnel, including this enriched streak, representing this highly mineralized body, and discolored as you speak of, is there anything that

(Testimony of Samuel Barker, Jr.)

suggests to you the fact that this ore body in the cross-cut and appearing in the Hornet discovery is a different [525] vein from that represented by the red streak?

A. No, sir, it is not different. It is possible, and I think it true, that the streak in the Mullins tunnel was one along which the vein solutions flowed and enriched that to a greater extent, but thereafter, or possibly at the same time, the replacement by copper of the granite, both to the south and north of that point, was made, which facts are similar to those that are found in the mines on the west side. Take the mineralized body as it exists in the red streak, and existing to the south, extending as far as the Hornet discovery shaft, I would say that is all one and the same vein. I obtained a sample from the drift from the bottom of the Hornet discovery in a southwesterly direction. I took a sample from there which I had assayed, and I also took a sample at a later date, which I produced here in court and marked.

As to Tunnel No. 37, and this cross-cut running to the north, there is a little mineralization there. You will find in places quite a good deal of the replacement by copper solutions, but when I examined it, I found at no place the bedrock material, or the solid material, exposed for more than a foot or eighteen inches above the bottom of the drift or cross-cut. This cross-cut has been filled for several feet from the bottom,—that is, the original cross-cut has been filled by material for several feet, so that you cannot see at the bottom of that working at all. The same

(Testimony of Samuel Barker, Jr.)

thing is true of the end of the tunnel, for only two or three feet at the face can you see any of the original bedrock material at all.

The strike of the vein encountered in the Mullins tunnel and in the Hornet discovery shaft is northeasterly and southwesterly. From several observations, I should say the dip was sixty degrees to the south.

Q. Take it in those tunnels, or in those openings where you [526] encounter the country rock, as distinguished from this vein material, either in the northerly or the southerly leads, what do you say as to whether or not the country rock which you encounter there is mineralized through chrysocolla, as Mr. Winchell says, just like the material that you encounter in the veins?

A. Why, the mineralization that you find in what was once the country rock is chrysocolla and cuprite at the surface. You do not encounter the same mineralization in the country rock outside of the boundaries of the veins as you do in the vein material in the veins. I did not find the discoloration by chrysocolla in the country rock in those places, the same as it is in the vein. The granite where it has not been replaced by copper solutions, is practically fresh in color,—that is, the original gray granite, and does not show any signs of breaking down, or the alteration of any of its constituent parts. Where you have the replacement, or impregnation, the chrysocolla or the copper minerals are through all of the material,—not through the coating but through the rock itself.

(Testimony of Samuel Barker, Jr.)

Where you have the replacement and to the extent that I have referred to, you have vein matter there.

Q. And now, instead of embracing this territory of three hundred acres and simply confining our observations to the ground in controversy here, the ground within the boundaries of the Butte and Boston placer, what do you say as to there the country rock generally is stained with chrysocolla in the same way as the material that you encounter in the veins, confessedly such.

A. No, sir, that condition does not exist there. The granite to the west of the Hornet tunnel, and west from the tunnel 31, does not show any such condition at all. The replacement of the original granite is practically all confined to the east from those points.

[527] I know of the existence of a dyke on the Bullwhacker, in the eastern end of the Bullwhacker, the so-called continental fault appears. Its walls are not for the limits, I should say, of that continental fault, and plainly visible as far as I could see from the underground workings that I surveyed and examined. I know that on the fifty foot level of the leaser's shaft on the Bullwhacker lode, the ore was mined for a length of at least a hundred and fifty feet east and west, and forty-five feet north and south. This material was all shipped to smelters. As to its being commercial ore, I did not see the returns of it. And the stopes were made on the ore above this fifty foot level, and from the cave that can now be seen at the surface, it shows quite a large ex-

(Testimony of Samuel Barker, Jr.)

cavation. I would characterize that territory where this mining was done as partially the continental fault and more especially outside and west of that continental fault, in the identical material that you have on the Butte and Boston placer in the Hornet discovery shaft cross-cut. In the removal of this ore the boundaries were very irregular indeed.

As to my finding anything in tunnel No. 36 in the way of a lead,—there is some very slight cracks,—there are small cracks there having a southerly dip and a northeasterly and southwesterly strike. There is some vein material there. A good wall has been developed in this tunnel from which you can get a strike and dip. I do not remember any but this one that showed the dip of the streak in there. The rock there is mostly granite, some little aplite in it. I would say that the streak is too long and its characteristics are too marked to call it a master joint or a crack in the granite. It is altered very slightly adjacent to this streak; it is practically granite. We have been talking about tunnel 36. I do not know how deeply into the bedrock you get in any portion of the workings of that [528] tunnel. If the bedrock is ten feet below the surface of the ground, it would be anywhere from ten to twenty feet into the solid rock.

I did not see any evidence of mineralization in Tunnel No. 35. You get into the bedrock about three feet at the face, and about four or five feet in length. I went in Shaft No. 19. I found a very good vein there. The only evidence disclosed by the workings

(Testimony of Samuel Barker, Jr.)

in that shaft, as to the strike, is found on the south side of that shaft, where the granite is exposed, and the vein which shows to the east and west. On the north side and the west side and the east side of the shaft, it is all the vein material. It is a very hard thing to determine its dip, because when I went into the shaft it had caved down from the sides and it was very hard to see any of the original material. The material is vein material, consisting of some small particles of quartz, clays and oxides and altered granite. I did not see any evidence of faulting there.

Q. I notice in examining Complainant's map No. 14, and especially in reference to this shaft, there are lines running north and south which would indicate, I suppose, a direction of the material in that way, and also the same markings on our shaft 21, as it appears on their map without number. What do you say as to whether or not the stratification in those openings would indicate that that is the trend of the material or not?

A. From my examination, I should say no, both as to the evidences of strike and dip in the two excavations, and also as to the character of the material itself.

I say that the material encountered in the southerly shaft and the northerly shaft is very dissimilar.

[529] Cross-examination.

(By Mr. SHELTON.)

The WITNESS.—I am a graduate of the college at Deer Lodge, class of 1895. I began the

(Testimony of Samuel Barker, Jr.)

practice of my profession immediately after graduation. Before that time, as an assistant in Butte engineering offices doing a general engineering business in the city of Butte, beginning with 1886. I was 26 years old when I graduated in 1895; when I entered college I was 22. Prior to that time I had been connected with two firms of mining engineers. Before I went to college at Deer Lodge I had worked in the capacity of sweeping out the office, and going out in the field and was the chain man,—assisted in the office in calculations, of areas and such, in the patenting of mining claims, and wrote papers and specifications, assisted in various ways. The very first piece of work after graduation that I was engaged in, was a chain man, or assistant to Mr. Gillie, in making the survey and examination of the Glengarry and J. I. C., for the purpose of determining how much ore Mr. Heinze had taken unlawfully from the J. I. C.; I acted as an assistant only: From that time on my work to the present time has been mainly as a surveyor. I have surveyed mining claims and locations, townsites and those surveys in a great measure have been for the purpose of testifying as to the facts and conditions found, before the courts. I have maintained an office in Butte since 1887, and have been actively engaged as a surveyor and mining engineer. The office of Barker and Wilson, or Pennington and Barker, as it was first known, has made more patent surveys and done more locating work, than any other single office in Montana. The work that has been done in our office is mainly the work

(Testimony of Samuel Barker, Jr.)

of surveyors; that is the foundation of the work,—the surveying first to find the conditions that they could be embraced [530] in the returns in patent surveys, or for testifying before the courts in relation to those things surveyed. I have been engaged in the business of mining engineering ever since I took hold of the office. I have not been in any outside enterprises at all. I have had an opportunity to pursue studies outside of the work or connected with the work that was being done in our office. The very fact that I am called into court to testify to the conditions, forces me to study those conditions, so that I may place them as regards my judgment before the Court. I have pursued studies not connected with the business of my office. I have been forced to look into certain things, only in some instances in a general way. For instance, being associated with Mr. Shelton, who is now asking me the question, he has forced me to look up different statistics that I might testify on the witness-stand concerning placer and lode controversies in this very community. I do not claim to be one of the real geologists. I think, though, that I can see conditions as well as any other man, as they are shown in workings, and those are the things that I have put a great deal of study—put into a great deal of study. I have looked carefully at those conditions, as well as a great deal of people who have testified on conditions in the Butte camp, and those things do not depend entirely on the study of geology. The facts themselves are the things that I have studied. I have not studied or devoted my

(Testimony of Samuel Barker, Jr.)

time to any large extent to the study of geology, but I have been compelled to study along with the mining law, and other things, the laws of the Interior Department, in order to keep up with the profession and to do justice to the clients of the office. I have not specialized along the line of geology, but I have specialized along the lines of examining and looking at mines, for the purpose of testifying as to their conditions in court. I would not admit that a man who had specialized as a mining geologist would be better qualified to testify as to [531] certain matters than myself. He can testify to the theories, but not to the facts. He would have a wider experience as to theory, and he would have seen other mines, of course, outside of the district that we are now talking about, but I think that I have had a very good opportunity to study the Butte district. I would not say that I was just as well qualified as though I had devoted myself exclusively to that line of study. There is a great deal in geology that I do not know, and other people do not know, but as to the geologist, of course, he goes into the matter from another side that I do not take up at all,—that is, the theoretical side. The geologists deal in theories as to how the materials or the veins or the rocks got into place, and I am trying to testify what I actually see on this ground. The geologist puts his own theory into practice as regards the subject of the special deposit under consideration, and, of course, in doing that he deals with the facts too.

I testified that there was a fault just east of the

(Testimony of Samuel Barker, Jr.)

Hornet shaft a short distance. I did not call that the continental fault. I called it one of the parallel cracks to the—or fault fissures to the continental fault. I looked at that fault carefully underground. I saw it underground just east of the Mullins shaft, after twenty-five or twenty-six feet. I saw that in the Mullins tunnel. I did not see it at any other place. The strike of that fault is northwesterly and southeasterly; it dips to the east. I do not remember of finding that fault anywhere else on this ground. The continental fault is to the east of the point we are speaking of; I do not know its exact distance; I saw it to the southeast, about five hundred feet,—six hundred feet away. I mean on the Bullwhacker. I do not know the width at that place. I said it had no well-defined walls there, that I did examine it carefully, and that I could [532] not find the limits of the fault itself. I could not tell its dip. I could not tell its strike at that one point. I could determine its strike. I determine that from knowing its position both to the north and to the south. I knew of it to the north, just north of Park Canyon, on what is known as the Lily lode. That is three-quarters of a mile north of the Bullwhacker. That is the nearest point north of the Bullwhacker where I know personally of its existence. I do not know the width of the fault where I know it in Park Canyon; I do not know its dip; its strike is northerly and southerly. As to its having any defined wall,—it is shown on the surface by the iron cappings, and of course, they would not give you any idea of the real

(Testimony of Samuel Barker, Jr.)

walls of that fault. There is a shaft on the Lily lode, just north of where the iron capping is found on this fault. As to whether the mining has been along the fault so as to expose its walls,—I was not underground in the workings. As to there being any deposit of mineral in the fault at that place,—what has been termed the iron capping exists there. The mineral in the iron capping is iron. There is no deposit of copper at the surface. The shaft itself shows,—the dump shows some green material. I do not know of the existence of this fault any point east of the ground in controversy in this case. I have not been down the BIRTHA workings or in the Sarsfield workings. I am acquainted with some of the workings on the Pacific. I prepared the map, Defendants' Exhibit No. 1. A portion of the boundaries of the Pacific claim, survey No. 2320 are represented on that map. The lines you refer to represent the mine workings; they are the shaft with cross-cuts therefrom, and tunnel, and a cut. I think the shaft is 200 feet deep. I was never down it. I was in the shaft at no depth. I did not enter that shaft at all. I was not in the cross-cuts north and south. I was not in these other mine workings to the east [533] that I have described. They represent openings on or in the earth. I did not make the surveys for that myself. Mr. W. W. Pennington made the surveys. I have not the map that was used in the hearing for an injunction in the case 9000, in my office, or a copy of it. I do not find it. I prepared a map at that time. We did not retain the tracing; the tracing

(Testimony of Samuel Barker, Jr.)

was used on the hearing. I testified that Shaft No. 9 on this map, Defendants' Exhibit No. 1, was marked No. 3 in case 9000 in the District Court, on the map that was introduced by Mr. Pennington at that time, and was referred to in the testimony by the witnesses in that way at that time. I have a brown paper map with these numbers on. It is the original map from which the tracing was made, that tracing being used in the hearing. There was a survey at the time; I do not remember, but I think Mr. Pennington did swear to the sizes and depths of the openings, because in looking over his notes, I find the depths and sizes of each shaft notes. I did not hear his testimony in court, and, of course, I do not know what he testified to. I do not find those noted on this map I refer to. I find them noted in his notes. I will bring those up here. I think Mr. Pennington's notes show the depths of the openings on the Pacific.

From the work done there, I should say the continental fault would be between the east end of the Hornet tunnel and the Pacific shaft. I cannot tell the dip of this continental fault, because the surface is caved now, and I have not been down in any of the shafts. That is quite a large fault; everyone speaks of it as a large fault. I say that the fault that I encountered in Park Canyon is the same fault that is shown in the Bullwhacker because there have been various shafts sunk on this fault, which is mineralized in places, and from which they have shipped ore, in a northerly and southerly direction. As to there being intervening points between Park Canyon

(Testimony of Samuel Barker, Jr.)

and the Bullwhacker [534] where shafts have been sunk on this fault—I have not examined those workings personally, but that is what is said of it. My reason for thinking that the fault which I saw in the Bullwhacker is the same fault I saw in Park Canyon, is because to the south of the Bullwhacker I find the evidence of north and south faulting, either on the Amazon or Altona. That would be the same fault. The Amazon and Altona are from fifteen hundred to two thousand feet south of the Bullwhacker. I think that is the same fault. It has not been traced continuously on the ground between these faults, but it is a large fault, but I do not think a series of them exist out there. I have never seen the limits of it exposed on the Amazon and Altona. I have seen shafts on it; I do not know how wide it is. I do not know its entire width, but I do know it is wider than the shaft. I have seen shafts that have been sunk entirely in the fault. That would make its smallest width five or six feet anyway. The shafts are fifteen or twenty feet deep, I should say. The shafts are not timbered. They were just openings into the ground, sunk by miners to see if they could find ore—and prospectors. The Altona is one claim and the Amazon another. I do not remember where these shafts were. They were either on the Amazon or the Altona. I remember the dip of that fault at one of those places very distinctly. Its dip was to the east. I think the workings on this fault on the Bullwhacker were 400 feet. I am not sure, though, now. I made the surveys there and I could tell by

(Testimony of Samuel Barker, Jr.)

looking at my notes. I stated that it was on a fifty foot level that material was stoped out for a width of forty-five feet. I do not know whether it was stoped to the same width below the fifty foot level. I have no surveys of any workings directly underneath the fifty foot level, excepting the existence of a winze that comes from the two hundred foot level up, and connects with this fifty foot level, and the drift that was run in the two hundred foot level, to the east from [535] that point. It is the same material that was taken out of this stope on the fifty foot level of the leaser's shaft on the Bullwhacker. It is chrysocolla; the original granite was replaced by copper minerals.

Q. Is there any one of the samples brought in here that closely resembles the material taken out of the leaser's shaft on the Bullwhacker, on the fifty foot level?

A. I have not seen the samples that were put in by others, but the sample I took from near the Parrot mine is very similar indeed, in fact it is the same kind of material. That is Defendants' Exhibit No. 75. It is a rock in which the original granite constituents have been replaced by copper minerals. In this sample, Defendants' Exhibit No. 75, you can see present all of the original constituents of the granite. The whole of the rock has not been replaced, but it has been replaced by copper minerals to a certain extent.

I was down in the 400 foot level in the Bullwhacker. Without reference to my notes I would

(Testimony of Samuel Barker, Jr.)

not be able to give you any accurate information as to how long ago it was sunk to the 400 foot level. I did not find at the 400 foot level that this material had been stoped out to a width of 45 feet. I found in the 400 foot level, going east in the drift, at that level, that the material was the original granite, was very much altered indeed. The openings to be timbered very closely indeed, and through the cracks in the timbers, the material oozed out. The original granite texture was destroyed, and it had become—well, it was clay like, and a great deal of water had been put into it, and it was like mud—running like mud—and that shows to me that the original granite had been altered by solutions of some kind. This was a drift that I was on. It was not a drift on this continental fault; it would cross the continental fault, because the drift was easterly and westerly [536] in direction, and the continental fault is northerly and southerly. The drift was on an east and west vein. It was in the country rock, at first, to the west, and as it went east, it passed and went into the soft material I have described. I saw no evidence of the drift crossing the continental fault. I did not try to determine the position of the fault on that level. The thing that I did look at was the material in its eastern end. That was so much altered and crushed and had the clay like appearance. I do not remember now as to its being in about the position that I would expect to find the fault on that level. I could not tell from memory that it was not in this continental fault. I stated it was soft ma-

(Testimony of Samuel Barker, Jr.)

terial, clay like in appearance. It was distinguished very easily from the granite that you found to the west. As to the kind of material you find in the walls of a fault generally—there is a great deal of it crushed material. It is between the fingers, it is very slick, indeed, and you will find rounded particles also, which show that motion has been occasioned along the line of the fault. The fault material I have described would be very similar in appearance to the material that I saw there. Some fault material has the characteristics of which I saw on the five hundred foot level. There was some water there. This fault fissure might and might not afford a channel for the free circulation of the water. For instance, if there were a great deal of clay there, that would be impervious to water. It might and it might not furnish a channel for the free circulation of the water along the lines of the fault and between its walls. Some faults are more open than others, but where you have a large fault, you have a great deal more clay and ground up material, which would not allow the free circulation of water. The material at this level was a light colored material. It was [537] very dissimilar from the material that I saw in the fifty foot level of the leaser's shaft. In the fifty foot level, the green coloring was downward in the rock. That was absolutely absent at the four hundred. Mining operations were carried on on the four hundred foot level. There was a cross-cut and drifting done. There was no ore extracted and shipped that I know of. Operations ceased in the

(Testimony of Samuel Barker, Jr.)

Bullwhacker about three or four years ago, I should say. I think it was carried along until after the slump in copper, which was the fall of 1907. I think operations were carried on about a year. I did not see any east and west vein in the Bullwhacker underground. The claim was located easterly and westerly. The Pacific claim was located northerly and southerly. I saw the discovery shaft, and I saw the vein as disclosed in the discovery shaft of the Pacific, and that was north and south, but the Bullwhacker discovery I have not seen. The location of the Pacific was July 21st, 1884. East and west veins which were cut by the continental fault would be dislocated. The absolute action of the continental fault in the Montgomery vein, is the—you find the vein on the west side to the south of where you find it on the east side. The Montgomery is about six hundred feet south of the Bullwhacker. I have not seen the vein in the Montgomery; I have been told it is to the south—a southerly dip. As to the continental fault being a normal fault, I have not figured it out. I think it is a normal fault. That would mean that the westerly wall would not only subside, but it would be eroded down to the—(interrupted) I would not say that the westerly wall had subsided with reference to the easterly wall of the fault; I should say that the movement with the fault dipping to the west, should be that the east side would go down and the west side would remain the same until eroded. [538] If the fault dips to the east, why the natural conclusion to take would be that the east side

(Testimony of Samuel Barker, Jr.)

would have the movement downward, instead of the west side. I would think the movement would be along the incline. If you have your east and west vein, with a dip to the south, a throw to the south, that I would conclude that the west wall had subsided; that would be the conclusion there from the facts you find in the ground. I think the fault was formed by subsidence there, or the readjustment of large masses to the east of this fault. I do not know as to the formation of the main ridge of the Rocky Mountains and the fault being simultaneous. It might be possible that the volcanic eruption to the west of here, which gives us the rhyolite, has something to do with that faulting. The conditions would show, according to the throw of the vein in the Montgomery, that the westerly wall subsided on the fault. There was then a break in the country along the line of the fault, and a cliff running northerly and southerly. That has been smoothed down by the process of erosion. Judging from its size, I should say that the movement had been quite considerable. Of course, there are two movements, you know, to the faulting—the horizontal and vertical displacement. There might have been a very great vertical displacement, and a slight horizontal displacement. If there was a great vertical displacement there would also be a great dislocation of any east and west veins with a very flat dip; but with a vein having a dip attaining near the vertical why there would be a very small displacement horizontally.

The dip of the vein in the Mullins tunnel is sixty

(Testimony of Samuel Barker, Jr.)

degrees to the south. With a vein of that character there would be quite a good deal of displacement. There are parallel faults to this continental fault. We have several in this ground in controversy. There are four or five places in the ground in question [539] showing north and south fault fissures. They are approximately parallel with the continental fault. I do not know how many of such north and south faults there are between the Hornet shaft and the Pittsmont shaft. There may be several that I do not know about. The ground has no development to prove how many there would be, or there are. There is not any way that you can tell without exploration of the ground. Underground development would be the only way of determining. I know that bedrock on the Pittsmont ground is very much lower than it is at the Hornet shaft. I know that the ground itself—now, the surface of the ground itself, at the present time dips about ten degrees toward the Pittsmont, and that at the Hornet we have bedrock at sixteen feet. At the Pittsmont No. 2 shaft, it is six hundred and twenty feet. I should say the level of bedrock at the Pittsmont would be between seven and eight hundred feet lower than at the Hornet shaft. It would be fully as much as eight hundred feet. I cannot say that that would mean a pretty steep slope to the bedrock from the Hornet toward the Pittsmont, because the developments in the ground do not justify that statement. For instance, the bedrock along the northerly vein is disposed at the Vesuvius at ten feet, in the Rabbit

(Testimony of Samuel Barker, Jr.)

about the same distance in, 31 tunnel about the same distance; in No. 30 tunnel even less than that, only seven or eight feet; and then a hundred and fifty feet west of that point, you find a drop in that horizontal distance of a hundred and fifty feet, of about a hundred feet; and I should say west of that you would probably find the same drops, because of the great depth at which you find the bedrock in the Pitts-mont.

Q. Well, in your opinion, Mr. Barker, is it likely that that very steep slope from tunnel No. 30 down toward the Pitts-mont ground is in any way caused by subsidence of the ground to [540] the west on account of faults—fissures running north and south?

A. It might be due to the fault agencies—subsidence of the ground. That is as good a theory as any other. It would not be the only way that you could explain such a steep slope to the bedrock at that place. For instance, the slopes of the hills themselves, where the natural bedrock is exposed, to the east of here, would give practically a slope which would bring about the difference in elevation as we find between the bedrock at tunnel No. 30 and the Pitts-mont shaft. The reason I say that is this: that I actually made a survey of the hill along the south line of the Pitts-mont fence, for the purpose of proving whether, if the hill continued on that slope it would show a depth to bedrock of approximately six hundred feet in the Pitts-mont shaft, and it did prove it and I so testified on a case involving the depth of bedrock in the ground immediately adjacent to

(Testimony of Samuel Barker, Jr.)

the Pittsmont. The same agencies that produce the continental fault, which runs east of the Hornet shaft, could produce the condition which I have explained between tunnel 30 and the Pittsmont shaft. Between tunnel No. 30 and shaft No. 21 there is a very great difference in the elevation of bedrock. In a horizontal distance of a hundred and fifty feet, a vertical depression of about a hundred feet. That would be very steep indeed, almost a cliff. That is a difference in elevation of bedrock, such as would be brought about by a north and south fault; I think that faulting has had to do with the subsidence of the ground there. I should say there would be a fault right alongside of Tunnel No. 30—very close to it. From the condition of the material I find in bedrock in tunnel No. 30 I should say it would be a north and south fault.

The vein in the Mullins tunnel has a southerly dip.

[541] Q. And where it is cut by any north and south fault, such as the continental fault which you have described, the throw of the western portion of the vein is towards the south as compared with the eastern portion of the same vein?

A. No, sir, I do not think that at all. The only evidence that I find on that subject is the little throw that is occasioned in the vein itself, that is shown in the Hornet tunnel, one foot to the south, and yet, when you get over to the fault near the face of that tunnel, why the evidence looks as if it is the same as you find to the west.

Q. Well, in the question, I said it is such a fault

(Testimony of Samuel Barker, Jr.)

as the continental fault—

A. Oh, you are supposing—

Q. I am supposing a subsidence on the west side always, a subsidence of the west side of the fault, that is the west wall of the fault, as compared with the east. A. It would go to the south, yes.

Q. And we can only explain the slope of the bed-rock to the south, only by assuming that there has been such a subsidence on the west side of these faults?

A. That would be one of the features to prove that theory. The dislocation shown on Exhibit No. 90 is one of the evidences that we must take into consideration. It is a fact that you find in the ground, and you also find a parallel one in the east where another is encountered.

Q. You can assume that there has always been a subsidence of the west wall of the fault, and explain the little dislocation that you have represented to the west, why that would assume a slight lateral movement there?

A. That might be occasioned by a slip in the ground. There might have been a slip in the ground which was other than a fault movement.

[542] Q. Well, any other faults, north and south faults, to the west, would continue to throw that vein in a southerly direction—that is, the broken portions or segments of that vein will lay to the west and the successive faults will be farther and farther south relatively to the part of it, which is shown on your map, Defendants' Exhibit No. 90?

(Testimony of Samuel Barker, Jr.)

A. If your theory is correct. I accept it as something reasonably to be expected, if you did not have something else coming in there that would change the position of the veins, and those very conditions seem to prevail here; they are not developed, in the workings, excepting the existence of the two little throws that they did have in those workings. The west throw or slip is only about a foot; the east one we have no working to prove how much. I should not say how much the throw is. If the dip of the vein were to the north, instead of to the south, and still assuming this subsidence of the west wall relative to the east, parallel faults, the throw would be to the north.

Q. So that, as to what you have called the north vein, you would find the segments of the vein as you went west, north of the portion of the vein represented in tunnel No. 31?

A. As you go west. Yes, if you had the supposed condition that you give here. I looked carefully at the vein as disclosed in tunnel 31 and where it leaves the fault near the east end of the tunnel, and I cannot discover any evidences of drag at all in either direction, so I cannot say. I cannot testify which way the real movement there has been.

I do not know of any east and west fissure on the Bullwhacker. I saw all the underground workings there up to the last day I made the surveys, and, as I remember, I was called on to make the surveys in that mine just prior to the closing down of [543] the mine. I do not know of any fissures there in the

(Testimony of Samuel Barker, Jr.)

Bullwhacker ground excepting the continental fault, and the vein mineralization that is attendant on the outside of that fissure. The mineralization that I speak of in addition to the fault is a replacement of the granite outside of the fault fissure by copper.

There is a fissure in the Mullins tunnel. You find an east and west fissure there. Between what you term the well-defined walls of that fissure and the west end, I find a width of two feet near the roof of that tunnel, just immediately underneath the wash or where the vein is lost in the wash, and going to the east from there, I find it very much smaller, and at no place east of the winze do I find it to be one foot in width. Comparing the fissures with the intense and immense fissuring of the Anaconda hill, I would call that a very small fissure, and every other vein in the Butte district, excepting the two large silver veins the Emma and the Rainbow, are insignificant in size with the two Anaconda Hill veins. To the north of this tunnel 34 there are several fissures in tunnel No. 31. At the surface there are three fissures there. In depth they will be one. They are spread out near the surface. My reason for saying that at depth they will be one, is they are too close together to remain as single fissures when depth is attained, and I also base that on hearsay, evidence given me by Mr. Williams, that the conditions in the Pittsmont show that they have but one vein there. From what has been given me by Mr. Williams, I can see no other reasoning than that it must be the same vein as shown on the Pittsmont. I

(Testimony of Samuel Barker, Jr.)

mean the north dipping vein in the Pittsmont, which has been developed from two to three hundred feet north of the Pittsmont No. 2 shaft; I do not remember the exact distance north of that shaft. The dip of that vein is from seventy-two degrees to [544] the north to vertical. To the west it has a slighter dip. As you come to the east, it is more nearly vertical. It has been cut and worked on the eight, ten and twelve hundred foot levels. It apexes about six hundred feet below the present surface of the ground. Mr. Williams told me that they had raised from the eight hundred foot level, I think, seventeen floors, and had there encountered the oxidized material. Projecting a line on the dip of the vein to the surface the line would encounter the surface north of the No. 2 Pittsmont shaft. I have not projected it at all. I do not know where it would be with reference to the east and west line drawn through the tunnel No. 31. I have left that to Mr. Williams. He has the information. He has shown me his maps and I would not be competent to testify as to the east position, because I could not tell the necessary work to prove where it would be. I do not know whether it would be north or south of that line. I do not know whether the vein would have to have a northwest and a southeast strike in order to come up with that vein, or whether it would have a northeast and southwest strike in order to come up with the Pittsmont vein; neither do I know what the lateral displacement of the vein would be as occasioned by the fault that you say we agree exists there.

## (Testimony of Samuel Barker, Jr.)

I find three distinct fissurings in tunnel No. 31. The one that is found in the north cross-cut in tunnel 31, is about ten feet in width. The two to the east of there, are very small indeed, from one to two inches in width. The material between the walls of the fissure ten feet wide is quartz and clays, some oxidized material, altered granite—ore. I would not say there were a number of streaks in the north fissure. There are two well, or more plainly marked mineralization streaks, one on the hanging-wall side and one on the footwall side. Only the footwall is very well defined. I found very slight staining [545] in that north cross-cut before I encountered the first one of those fissures. I had to look very carefully indeed before I found even a stain by copper, south of the first streak in that north cross-cut. At twenty feet deep there was a very small streak about two inches in width, which had more or less staining in it, and until you got to the vein, three feet beyond that, out twenty-six feet from the tunnel, you had no mineralization. I did not encounter these same streaks at any other place. That is the same fissure that I found in the north cross-cut. You find the same fissure as you go easterly into the tunnel from this cross-cut. They are both together there; only one fissure. The other fissure I find in the ground in controversy is the small, highly mineralized fissure in the south cross-cut, near the face, which has a north dip and easterly and westerly strike, and the fissure in the face of the tunnel, which has an easterly and westerly strike and a northerly dip. The fissure in

(Testimony of Samuel Barker, Jr.)

the south cross-cut is a very, very small vein. There is no connection developed at present with the fissure shown in the north cross-cut. I said yesterday on my direct examination, they will all be the same vein in depth. I think that this fissure in the south cross-cut will be the same fissure in depth as the one exposed in the north cross-cut. There is also a fault fissure there. The fissure in the face of the tunnel is a fault fissure, but it is mineralized. It is what I call a fault vein; a very small one. I think at depth you will find they are all the same thing. I testified yesterday to a small fissure which is almost parallel to the vein, and which is found at the entrance to the north cross-cut, and also in the tunnel to the east, that has a south dip. As to its being of the same system of fissures as the others I have mentioned—it seems to be later than the vein, because it has thrown and dislocated the east and west veins [546] somewhat, although there is not enough development at present to show what has happened there. It might be a part of the same system, but it has a different dip entirely and a different strike than the vein system which we have been talking about. The dip of the vein in the south cross-cut is to the north. I don't believe I took the actual pitch. I do not find it in my notes. The pitch of the vein in the face of the tunnel is fifty degrees to the north. I think that at that depth it would unite with the other fissures which I saw in the north cross-cut. There is no actual continuity there now, because the vein to the west of that has been faulted. It won't unite with

(Testimony of Samuel Barker, Jr.)

them right now. Originally it was one and the same vein, or it was a part of the same vein in depth. I do not say it is a continuation of the fissures shown in the north cross-cut, but has been disconnected on account of an intervening fault. I do not think that the north cross-cut has been extended far enough to find the two fissures that are found northerly in the face of this tunnel. The fissure in the face of the cross-cut, in the face of the tunnel, would not unite now in depth with the fissures that I saw in the north cross-cut, because the veins are dislocated because of the fault that exists there. That is the fault which is marked with a heavy blue line on Complainant's Exhibit No. 17. I say originally the two fissures that are found at the face of the tunnel No. 31 were a part of the vein that is now shown west of the north and south fault in that tunnel. They are the eastern extensions of the fissures that show in the north cross-cut, or were so originally. I do not know of any other fissures there than those I have testified to.

I find a vein fissure in shaft No. 9, in a cross-cut therefrom, and in the Rabbit Discovery, and in shaft No. 1. A part of the material in the fissure in 9 is different than in the vein [547] in the face of the cross-cut in tunnel 31. Originally I think the one in shaft No. 9 was a portion of the fissure that is found in tunnel No. 31. That has been broken by a fault that is between the two. I think it is a part of the same fissure on its eastern course. I think the Rabbit Discovery was originally a portion of the

(Testimony of Samuel Barker, Jr.)

same fissure, before being dislocated by the faults that exist in this ground. There is a fault showing in shaft No. 9. I do not know of any fault between the Rabbit Discovery and shaft No. 9. There are no workings to prove it. You would have to have a fault in order to account for the same fissure showing in the two different openings. The continuity is broken there, and I think the fault exists. The fault in shaft No. 9 accounts for the dislocation in shaft No. 9 before you get to the Rabbit Discovery, because the fault is on the west side of the ore body as shown in shaft No. 9. The fault in shaft No. 9 is on the west side of the cross-cut, where this vein is found on the ground. There is a cross-cut running to the north. The fault does not appear in the cross-cut, but in the caved portion just below it. It is underneath that cross-cut. In fact, there is more than one faulting plane there—you can see two easily. There is nothing there that would enable you to determine the movement of the throw. The assumption could be made that the vein shown in the Rabbit Discovery was a parallel fissure instead of a continuation of the vein fissure shown in the shaft No. 9, but you have the unusual here, in that these fissures are dipping to the north, and they have a northwest strike. Nothing has ever been developed out there to show it to be a parallel fissure dipping in the same general direction, but you have the development on the south vein which has a different strike and a different dip. There is no development between the Rabbit Discovery and shaft No. 9. It

(Testimony of Samuel Barker, Jr.)

might be proven with [548] work that the fissure in the Rabbit Discovery might be a different fissure than that shown in shaft No. 9.

There is also fissure No. 1 between the one in shaft No. 9. It is very small; I think I said two or three inches yesterday. There is no actual development to connect that with anything else on the ground. I think originally it was a portion of the same fissure as developed now by the cross-cut in tunnel 31. As to the development between the north cross-cut from tunnel 31 and shaft No. 1, there are five shafts, two show now, are open for inspection, the others being filled—shaft 1 and shaft 2 now being accessible, and the Olivia Discovery shaft. You have an aplite dyke in there running northerly and southerly that might have dislocated the vein to the west or to the east. The aplite dyke might have had some effect on the vein. I stated that the aplite was an intrusion, and that the granite was first formed and that then the aplite, in a molten state, was intruded into the granite. And I also told you that in tunnel No. 30, that the material on the west side has dropped considerably along that aplite. Now, that was intruded in there, and yet we both agree that we had a cliff on the west side of that aplite, therefore it looks as if there was a movement along that aplite. Now, the same thing might have occurred in more or less degree along the north side of the aplite dyke, which is very plainly marked in shaft No. 2. In order that there should be any disclocation of the vein, there would have to be a break in the rock and a move-

(Testimony of Samuel Barker, Jr.)

ment. The aplite dyke in itself would not be sufficient to account for that, but if it showed material along its walls it would account for some movement. The aplite was there before the veins were formed. It is true that the aplite, together with the granite on either side of it, would connect with the fissures in which the veins were afterwards formed; but you have dislocations as you have [549] west of tunnel 30, in the material, and I do not know whether they are due to faulting or just the action that we now see on the surface of the ground to the east, which forms the cliff. I do not say that the aplite dyke running north and south in shaft No. 2 accounts for the assumed break in the continuity of the northwest and southeast fissure. I said it might be, to a very small degree. Aside from that aplite dyke there is not any fault exposed or shown by any workings on the ground there, between the north cross-cut from tunnel 31 and shaft No. 1. The developments have not connected up these various workings to prove whether there is a fault there or not. If you assume that the fissure in shaft No. 1 is a continuation of the other fissure to the east you must have a dislocation. It might be a different fissure. There is evidence, though, of faulting near the face of the north cross-cut on tunnel No. 31, which I have neglected to state, and the effect of that is not shown there at present. It is on the west side of the cross-cut, where it originally stood before the nine feet that was excavated, that they done during this trial. I find a fissure in the north cross-cut from the Vesu-

(Testimony of Samuel Barker, Jr.)

vius Discovery shaft; also in the south cross-cut; they are very small indeed. I did not consider them important. The one that is south, in the south cross-cut in that shaft is from six to ten inches wide. Well, in the face of the drift at the back it is smaller than that, but at the bottom it shows a greater width, I think six inches in width will show there. I do not know whether that is the same fissure as shown in the north cross-cut there, from tunnel No. 31, because there is no workings to prove the continuity and there are faults existing between shaft No. 9, or the workings in tunnel 31, and this Vesuvius Discovery shaft. There are several faults on the ground exposed now, which dislocate [550] the vein so that its absolute continuity cannot be proven. It dips to the north. I could not say whether it was a part of the fissure shown in the north cross-cut of tunnel 31 or not; there is nothing to connect them up.

There is also a fissure in the bottom of the Hornet Discovery shaft, and at least three highly mineralized, chrysocolla and cuprite streaks, between the bottom of the Hornet Discovery shaft and the Mullins tunnel. They are exposed in the cross-cut running from the cross-cut in the Hornet shaft to the Mullins tunnel. The one in the Mullins shaft is in the drift to the west. I measured it in one place a width of a foot. It is pretty hard to get its true width there. It is very flat there. I should say the dip, where it is shown, only about thirty-five or forty degrees to the north, but in the east side of the shaft and at the bottom, this streak seems to be taking a

(Testimony of Samuel Barker, Jr.)

greater pitch, or what I should say would be the normal pitch, but there is not sufficient work to prove yet what its real dip and strike would be. I do not know what its normal pitch is. It would be sixty degrees to the north. The fissure shows on both the south and north sides of the drift going to the north from this shaft. It shows in the drift which lays west of this shaft. Its strike is easterly and westerly. It shows on the north side. Because of the flat dip, it would show on both sides. It shows in the south side of the shaft at the bottom, and also on the south side of the drift going to the southwest side, the fault is reached in that drift which is shown in your Exhibit 15.

I also find a vein fissure in shaft 21, and also in shaft 19. I do not recall any others.

There is also the Pacific vein fissure in the vicinity of the ground in controversy. I do not remember exactly where it is. It is parallel to the continental fault, but it is mineralized. It is about four hundred feet from the continental fault east. [551] The continental fault is mineralized. Ore has been shipped from it at different places. There was ore shipped from the Sarsfield and the BIRTHA. I think that was taken from the continental fault, for this reason: that I found a map in the office to-day which showed a stope from a winze in the BIRTHA tunnel, just east of the point marked "A" which ran in a north and south direction. The stope was three sets wide and about sixty or seventy feet long.

I also know of a fissure in that neighborhood, in

(Testimony of Samuel Barker, Jr.)

the Spread Delight lode; that runs easterly and westerly. I do not know how large that fissure is. I made an examination, though, and testified in court. I found a good vein fissure running easterly and westerly in that claim.

I also know of the fissure in the Rory O'More. That is an east and west fissure. I do not remember now the width of that. I remember it in making the survey of the King Stella lode.

There is also a fissure on the Little Spring; that is an east and west fissure. I do not remember its width now. I made the patent survey on that, and looked carefully at the vein, but I do not remember now.

There is also a fissure on the Monima lode, that is an east and west fissure. I made that patent survey there. It is not a large fissure. I do not recall its exact size now. The strike of the fissure on the Rory O'More is easterly and westerly. It dips to the south. I do not know anything about the dip of the fissure on the Lily. The dip of the fissure on the Little Spring and the Monima is to the south. Then I remember a claim called the Blake lode, it adjoins the Colleen Bawn, on its east end line—that has a south dipping vein, from which I saw some very excellent sulphides taken, which are identical with the ore we get on the west side. I never examined the Rising Sun and Copper Queen.

[552] As to veins south of the ground in controversy, I made the survey on the Maggie Franklin, which is between the Bullwhacker and the Montgom-

(Testimony of Samuel Barker, Jr.)

ery. I do not recall the size of the fissure there, but it might have an east and west fissure, dipping to the south.

As compared with the Butte Hill, the fissures on the ground and in the vicinity of the ground in controversy are very much smaller indeed. It is unfair to compare these, though, with the largest mineralization on earth, as far as copper is concerned, which we find on the Butte Hill, and it would be just as unfair to compare any other copper deposit that I know of, in granite, with the Butte Hill.

Q. Now, I think that you said the mineralization in the veins in the two districts was brought about in the same way?

A. Yes; theorizing, I think the copper came from the same source. Of course, I don't know how, or at what time it was brought into the fissures or did replace the granite here. All I know is what I see on this ground, as mineralized rock and granite and aplite, and the other features that are shown. I think that most of the mineralization came from rising solutions, for the reason that we have our continental fault and the various other faults parallel to that in the ground, and the facts that you can see existing there in the work. Now, for instance, the material between the fault planes in the north and south faults in tunnel No. 31 is very much mineralized indeed, and directly to the east the granite is not mineralized at all. I think that possibly there was some mineralization prior to the faulting, and that the faulting has allowed the free access of those solu-

(Testimony of Samuel Barker, Jr.)

tions to cracks that would be set up because of the faulting of that ground. Of course, that is the position that was held by the geologist who examined the Butte district for the United States Geological Survey.

[553] Q. The fissures were there,—that is, the east and west fissures,—before the faults occurred, because of the discoloration of the veins. And wouldn't you believe that the mineralization of the veins,—that is, the east and west veins,—took place before the faulting, on account of the fact that there was no mineralization at the four hundred foot level of the continental fault in the Bullwhacker?

A. I do not see that at all. I said the granite was altered and changed on the four hundred-foot level of the Bullwhacker. I found no chrysocolla, but that does not make any difference; I found no aplite. As to finding sulphide,—I did not assay the material, but it certainly is vein material, because you do not find the granite in the condition that that material on the Bullwhacker four hundred is found in. But going back to your question, and answering the first part of it,—yes, the veins were there, and they were mineralized before the faulting, but I think the faulting has something to do with the mineralization or replacement of the other material adjacent to it. My position is as you state: That the east and west fissures were formed, the mineral was deposited by ascending solutions, and then there was subsequent north and south fracture, and the solutions went into those north and south fractures; and into the east

(Testimony of Samuel Barker, Jr.)

and west fractures that were already there and new ones that were opened up, because of the north and south faulting. I think the veins of the Butte Hill were formed from the ascending solutions, and possibly solutions were brought into the fissures from the country rock,—some of the minerals that are there now. That is the theory. You find generally, on the Anaconda Hill, no copper ores in the oxidized zone, but at the Parrot, where I took the sample that I have introduced here, I do find chrysocolla in the same condition, as far as I can tell, as I view it, on the ground in controversy. I have found [554] chrysocolla on the west side in no other place. I remember at the Green Mountain, away back in 1887 and '88, that the granite was green just like the sample that I have brought in here, but I did not look at it carefully enough at that time to determine what it was.

In the ground in controversy, and in that vicinity, you find cuprite and chrysocolla, and possibly a little black oxide of copper, in the oxidized zone and above the permanent water level. As to why you find chrysocolla and cuprite above the permanent water level on the ground in controversy and not on the Butte Hill,—the conditions possibly existed on the Butte Hill in the first place, but on account of the intense mineralization and the oxidation of the granite on the Butte Hill, the very granite is so changed that it is hardly recognizable.

I do not know that in the ground in controversy in this case there was a system of faults running north

(Testimony of Samuel Barker, Jr.)

and south, and the subsiding of the walls of the fault on the west side. I do not think that that is probably the case. There has been a great deal of erosion going on on the mountainside around there, but you take your subsidence, if the west side had fallen to any considerable extent, that face would be shown now by the workings that we have on the ground,—that is, only a portion of the top of the ground remaining intact on the east side would be eroded, and we would have a great deal of material thrown over the cliff, as it were, and that is not the fact there at all. When the fault occurred,—with the subsidence that you are supposing, of bringing it down the incline to the regular surface, but sloping upward as you go to the east,—we have a cliff, and with the erosion from the east, you would certainly take off some of the top of the cliff material, before a great deal of [555] that would drop down into the chasm, and we do not find that there at all. We find just the material on either side of that fault practically at the same level now.

Q. That is, you do not find it at the same level—you find it sloping to the south, don't you,—the bed-rock, as you have already told us slopes toward the west, a very steep slope toward the Pittsmon't?

A. Yes, but in the width of the fault, it would only be a few feet vertically.

Q. Isn't the continental fault very wide, and divided into a system of parallel fractures? Aren't every one of those faults parallel with the continental fault, running along with it, and around them, part

(Testimony of Samuel Barker, Jr.)

of the system of faults?

A. Yes, they were either occasioned either at the same time or later. It would seem to me that with a great deal of vertical movement in the continental fault, that a great deal of wash material would be found on the west side of the continental fault that does not exist there now. There has been a good deal of erosion around the granite which forms the sides of the mountains there, because the developments that prove the depth show that. I do not know whether the granite there contained any copper. The granite generally in the Butte district does not contain any copper unless it is mineralized. You can see it out in the country rock, as it is called,—you cannot see it with the naked eye. It would take a very large amount of material assayed to give you the slightest trace of copper. Now, that, of course, I say from reading and hearing Mr. Winchell's testimony here in this case and in previous cases. I think the geological folios of the Butte district states that the granite in this locality does contain copper. It is contended that some of the mineralization came because there has been a subsequent enrichment of the veins [556] on the hill by descending solutions, and that the source of the copper in those descending solutions is the copper in the granite, and that it was obtained from the decomposed granite. I do not know anything about the theory you state; that if there was such a mineralization in the vicinity of the ground in controversy in this case, it would form chrysocolla on account of the excess in aplite.

(Testimony of Samuel Barker, Jr.)

I would not say that that was not true. I do not think if it was so formed, that it would follow that it would be generally distributed there throughout the country rock, on account of the smallness of the fissures. For instance, I have seen stopes in the Leonard mine where assays would have to be taken of what to the eye was granite, in order to tell the foreman or shift boss whether that could be taken and shipped to the smelter or not. The commercial ore there to-day is shipped because of the assays that they get. For instance, one set might be taken out to-day, right alongside of it to-morrow would not be taken out, but would be left as waste; and yet five years ago that material thrown away to-day might be the ore that is mined in the Butte district of the copper mineralization, because of better facilities for doing the work and economy.

We have the chrysocolla on top on the Bullwhacker; we find no chrysocolla and no cuprite on the four hundred foot level, only this mass of decomposed granite and altered granite, and that, therefore, no sulphides would be found under that,—I think that is the proposition you are trying to get at,—the mineralization will cease or bottom, or come to an end. There is absolutely no development out there to prove or disprove the proposition that with greater depth on that continental fault sulphides of commercial value will not be encountered in the material. It is not true that so far as the development has gone, sulphides have not been found in the continental [557] fault, because in the Montgomery,

(Testimony of Samuel Barker, Jr.)

between the walls of the continental fault, a portion of the east and west vein that exists there has been shipped as sulphide ore. That was from the east and west vein. Outside of any east and west vein, I do not know of any sulphide encountered in the continental fault. Of course, the work is not deep enough to prove or disprove the proposition. That would not tend to prove that it was a mere superficial deposit. For instance, in the Live Oak, about which so much is being said, the surface was chrysocolla, the condition we find in the Bullwhacker is encountered at greater depth, and beneath that they have sulphide ore. I do not remember whether beneath the continental fault in the Bullwhacker there is any east and west fissure. There is a deposit of chrysocolla there near the surface. The source of that mineral is from mineralized solutions; I do not know that they are descending. I think the mineralization comes from both descending and ascending waters,—ascending in the first place. I would think that both ascending and descending solutions were found in the fault fissure. I believe that the theory is as you state; that the deposits of chrysocolla, and the sustaining of the granite in this vicinity, is due to the presence of copper in the granite in the form of a sulphide, enriching it, and by oxidation it has changed and has, on account of the presence of the aplite, formed a silicate. There is quite a good deal of the granite replaced by copper minerals in this vicinity. I have heard it advanced by Mr. Winchell that the aplite there accounts for the fact that the

(Testimony of Samuel Barker, Jr.)

copper staining is in the form of a chrysocolla. The aplite contains about ten to fifteen per cent more of silica than what is known as gray granite. There is some aplite over there,—more than you will find on the Butte hill. Sometimes it occurs fairly regular, and at other times very irregular. If it occurs in a regular shape, being [558] so silicious, it would bear some resemblance to a vein. Miners sometimes would call that sugary quartz in this camp.

As to how the quartz was discovered in the Torrid and Tropic claims,—two shafts were sunk on the Wilson placer about ten or fifteen feet east of the section line, which is the west boundary of the Butte and Boston placer, to bedrock, and from there developments were continued and veins found. The discovery in those claims was by underground workings in adjacent claims. The workings were placed on the claim immediately adjacent, to the east. For instance, the Butte and Boston Company own Survey 1516 placer, and they were enjoined from doing work on the piece of ground to the west, so they sunk these two shafts as near as possible to the Torrid and Tropic, and when the bedrock was reached, then ran in under, without the other man knowing it, and made a location. The other man was going down from the surface within the Torrid and Tropic and trying to reach bedrock first. In that way, they made prior locations and prior discoveries.

There is an extension of the vein at the Mullins tunnel by a spread of mineralization laterally, northerly and southerly. I think the fissures were there

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first; I do not know; I am testifying to what I saw on the ground, and not what might have happened millions of years ago. I am not studying up any beliefs; I am trying to tell you what I saw in the ground there to-day, and not what occasioned those openings, but the facts. I said there had been an enrichment by replacement. That fact is shown there, and there has been an enrichment of what was the country rock. I do not think the copper which caused the enrichment came from the vein. I do believe, however, that it came from the faulting which we find out there, which allowed the free circulation of mineralized solutions. The solutions ascended in the first place through the fault fissures.

[559] Q. Well, there was first an ascending solution and a deposit of the mineral, wasn't there, according to your idea, and then a subsequent faulting and a circulation of water, and a distribution of that mineral,—that is, a distribution of the mineral first deposited?

A. Yes, and more mineralization was brought in, because of the faulting,—from depth.

I think there was a secondary deposit by ascending solutions in the fault. The geological folios say that in fact,—says it is genetic, the secondary deposit is genetic of the replacement in the deposits in the Butte district.

There was no faulting in the Hornet shaft that I have seen. The nearest to it was a fault about five feet west of the Hornet shaft. There is another one east, at thirty or forty feet, may be fifty feet east of

(Testimony of Samuel Barker, Jr.)

the Hornet shaft, and there is another one—I beg your pardon—in the winze, or it shows just south of the winze that is in the Mullins tunnel, that would be within probably ten or fifteen feet of the bottom of the Hornet shaft. As represented on the map, Complainant's Exhibit No. 15, it is a blue line having approximately a north and south direction, and extending through the Gulf discovery; that is the way it is shown on that map, and projected in a southerly direction, would run east of the Hornet discovery.

There is a stain of mineral in the north cross-cut from tunnel 31, before you encounter the vein. I don't know where it came from. It might have come from a cracking open or the fissuring of this ground by subsequent faulting, or it might come from a number of other agencies. It might have come from the decomposition of the granite, assuming that the granite contained copper. It is a green stain; it would be either an oxide or silicate. It is similar in color to the walls of the Hornet shaft; they are both green. I do not know that the [560] silicate and oxides of copper are practically insoluble. I don't know as to the relative solubility of the oxides and the sulphates.

And if the chrysocolla and the oxides are practically insoluble in water, how would you account for their spread from the Mullins tunnel into the adjoining rock,—I mean from the fissure in the Mullins tunnel in the adjoining rock, so as to enrich it, and to extend the vein?

A. I do not think that the water that did take the

(Testimony of Samuel Barker, Jr.)

water into solution there is the same as the water we have to-day for drinking purposes. I think it was a very powerful agent for taking minerals or for picking up the minerals, and those minerals becoming a portion of the waters. I think that the ascending solutions in part went into the enclosing rock from the fissure. These ascending solutions came from a very great depth where there was very great pressure. When they cooled, why the copper and the other minerals were precipitated out of the solution. Of course, cold water does not hold as much in solution as hot waters will of the same mineral.

Q. When they reached the level of the Mullins tunnel, where the pressure was not great, and the minerals would be deposited in the fissure, wouldn't it run in the country surrounding it?

A. Well, I don't know what the pressure was. Of course, undoubtedly,—or the heat of the solution,—of course it must have been very much lower than from the point,—or its origin. Those are theories that I do not and cannot go into. The proposition is, as I told you before, I see something underground, and I am trying to tell you what I see there, and not the theory as to how they got there. I do not theorize at all. The copper is not painted on the rock, because you break fresh surfaces, where you have absolutely regular faces, on the broken surfaces, and you find the copper disseminated through [561] the whole mass. It has replaced it. It is not all in little cracks. I have not seen a piece of granite under the microscope, that is, a thin section

(Testimony of Samuel Barker, Jr.)

of such. I think, though, that the mineralization would be effected because of great heat and great pressure on these mineralized solutions. If the rock was permeated with the mineralized solution, and the mineral was deposited, that fact would be shown by the small cleavage planes and the cracks and crevices in the granite, filled by minerals. That is not the case out there. As to Defendant's Exhibit No. 75, the copper is in the form where it has replaced a portion of the original granite constituents. I have not made a chemical analysis, but I should say the ferro-manganese of the granite has been replaced in part. To me, it looks as if the feldspar is the mineral that has been replaced there, for the most part. The black spots is the mica of the granite. The feldspar in the original granite is in crystalline form. This sample is a sample of clear granite; there the feldspar is slightly pinkish in its color, and the quartz is whitish.

If the country rock is subjected to the action of a solution containing copper, the copper might be deposited without there being any replacement of any of the original material of the granite. That would show in cracks, though, or crevices, or the joint cracks or major cracks, and joints as they have been called here. It could also be deposited in the pores of the rock, if granite is porous. I do not think granite is porous. I think that at a great pressure, you could force gases into the granite, a very slight amount of the gas would remain there.

Q. But not under pressure,—that is, not under

(Testimony of Samuel Barker, Jr.)

great pressure,—under ordinary pressure, wouldn't a piece of granite if subjected to the action of a solution,—not a solution, but if it is subjected to the action of water carrying copper in the [562] solution, wouldn't there be a deposit of copper, or might it not be deposited without carrying away any of the original constituents of the granite?

A. That would be very, very small indeed, though, if such could be done. There is too much of the mineral in Exhibit 75 which is mineralized to show that what you are contending could be done. From what I see on the ground, I say that that granite has been replaced by copper minerals.

Q. Well, assume, Mr. Barker, that there has been a disintegration of the granite in the vicinity of the ground in controversy, in this case, and that the granite contained copper in the form of sulphide in minute particles and that it became dissolved on account of the action of the surface waters, and that it has circulated through and soaked into the granite. Wouldn't that account for the greenish stain which occurs there, remembering that the ground in the vicinity contains a great deal of aplite which furnishes an excess of silica?

A. If you assume your proposition, some of the mineralization there might be accounted for in that way, but in the mineralization that I saw in the ground now, it could not be accounted for in that way.

I have never gone into a chemical analysis of copper, or the conditions you suggest about sulphuric acid and such as that. But here alongside of the

(Testimony of Samuel Barker, Jr.)

Parrot vein, where, so far as I know, no aplite is found, I find the same conditions that I do on the ground in controversy in this case. As to there being aplite there,—the fact on the ground now is that I do not see it, and I saw a large area of this replaced granite exposed on the surface now, or near the surface.

As to why you do not find this same green staining of the ground on the Butte Hill as you find on the eastern portion [563] of the ground in controversy and in the ground generally in that vicinity—there has been a greater mineralization on this side, undoubtedly,—vastly greater than you will find on the east side, and on the Anaconda Hill conditions are absolutely different than we find on the east side at the surface,—that is, the granite is entirely altered and oxidized. It would be true, as you state; if this aplite existed in the same degree on the Butte Hill, the copper from the granite coming in contact with the excess of silica would become insoluble, and remain there, instead of being carried down into the veins and distributed, if Mr. Winchell's theory is correct. I do not know what the solubility or insolubility of chrysocolla and cuprite is.

In giving my definition of a vein I did not say that it should have definite boundaries. I said considering the district which you have under discussion. That is the case we never had a good definition of a vein. Under the conditions, it is impossible to give one.

I would not admit, that applying the generally ac-

(Testimony of Samuel Barker, Jr.)

cepted definition of a vein, there is none in the Hor-net shaft. Mineralized rock is there, but not the definite boundaries. Definite boundaries are not necessary in order to constitute a vein. For in-stance, on page 253 of Mr. LeCompe's text-book on geology, he says that veins might be classified into three different classes. Of course, there are a great number between these. For instance, veins of segre-gation, in these the vein material does not differ greatly from the enclosing rock, such are the irregu-lar lines of granite in the granite. The lines differ-ing from the enclosing rock only in color or texture. In these cases there seems to be no definite line of separation between the vein and enclosing rocks. No distinct wall to the [564] vein. I understand the term vein, as it is considered, is the term used in the Statutes of the United States, and everywhere and on every page that I have read, where the statutes are construed by the very judges on the bench, they have made plain the fact that veins were not made on scientific principles or for geologists, but the broad-est construction should be placed on what the stat-utes contemplated. That whatever a man found mineralized, he called that his vein. For instance, on page 337 of Lindley, he says when the locator finds mineralized rock in place, that constitutes a discov-ery and justifies the locator in making a location. The Circuit Court of Appeals in the celebrated Migeon case, concerning the Morning Star Lode, did differentiate between what the two locators on the same vein might have to show in court, and what a

(Testimony of Samuel Barker, Jr.)

known vein in the placer should be, under section 2333, they also gave two other classifications there. The case I refer to is the case of Migeon against the Montana Central Railway Company. They were considering the case of an alleged quartz lode within ground patented as placer. I did not say that their definition was different from that contained in Lindley. I said that the character of the evidence should be stronger as to a vein than that which they would accept under section 2320, where two litigants were at law about the same vein. Twenty-five feet on each side of the vein are the words of the statute where the placer claimant can patent a lode within his placer. Generally speaking, twenty-five feet on each side of the vein has always been, as far as I have known, up to the time of Judge Hunt's decision in the Veronica case, to mean twenty-five feet on each side of the center of the vein. That was the common acceptance of the term. Judge Hunt's decision was twenty-five feet on each side of the boundaries of the vein, as I understand it. Developments [565] will show where the limits of the vein are. You would have to ascertain those definite boundaries before you could determine the extent of the ground that could be claimed.

Q. Now, if you were to assume that the deposit in the vicinity of the Hornet shaft is irregularly distributed throughout the country rock, in spots and stains, there would be no definite boundaries which could be ascertained, would there?

A. Yes, because the work done in tunnel 31 and in

(Testimony of Samuel Barker, Jr.)

tunnel 36 shows that the granite has not been mineralized, and certainly with more development to the east of tunnel 36, would prove where that mineralization commenced. As you approach tunnel 35 and 36 you are going toward the west from the Hornet tunnel. The condition we have described is general to the east of tunnel 36.

Q. And assuming that the conditions exist there as Mr. Winchell described them, the deposit of mineral *existing* so existing would not constitute a vein, would it? He described an area of ground several hundred acres in extent and mineralized, the mineralization being in spots more or less irregular and unevenly disseminated throughout the country rock, in certain places little nests of cuprite and oxide, in nests and cracks and fissures in the granite, and in other places just a mere slight staining of the granite, and in other places no occurrence of mineral, or none discernible, and not ascertainable except by an assay, and then very slight. With such a distribution of mineral there, you would not insist upon calling that a vein, would you?

A. I certainly would. It is subject to location. It is mineralized rock, and it is in place. If Mr. Winchell's definition or proposition should be put upon the Leonard vein to-day, why the Leonard vein would not be located, and a great number of the fissures that are now being worked underground in the [566] Butte mining camp, would not be veins under the proposition as laid down by Mr. Winchell. For instance, in the Mountain View I saw what casually

(Testimony of Samuel Barker, Jr.)

I should think was granite, and yet on a close inspection of that, I found shot like pieces of copper glance in the granite material. Now, you could not see any alteration of that granite even at great depth, and yet that is really good ore. The Leonard and other veins I speak of are not well-defined veins, or veins with definite boundaries. If you do enough work down there, you might find the boundaries, but I said a little while ago the boundaries of to-day are only commercial, and to-morrow or next week, because of some new process affecting the economy of mining operations, smelting operations, will make that which is worthless to-day, commercial ore to-morrow. Those boundaries might be hundreds of feet distant from each other in the Leonard mine, and they probably will be in time. And the very same thing would exist in the ground in question. It might be that if you were to take an area of three to four hundred acres with the mineral distributed throughout as described, there would be difficulties in determining the rights of different locators, if it was all one vein. The man that had the prior location would take what was inside of his ground, I should say. Of course, this mineralization does not spread a great deal west of what we term the continental fault. To the west of that mineralization, we will find the fissure without the attendant replacement on either side of the fissure. If a man had the apex of the vein he would not need to confine himself to the limits of his locations, because he would have extralateral rights. As to such a thing being an absurdity, I do not know

(Testimony of Samuel Barker, Jr.)

what they meant when they used the term "vein" in the statute.

I think some of the feldspar is visible in Defendants' Exhibit 75, and probably very much altered. The dark looking [567] minerals that appear there is mica. I do not think there is anything else besides the mica. I know from this sample that it is not the case that those dark minerals are the first that disappear in replacement and enrichment. You do not find any mica in vein quartz. I found it in some instances within the altered granite that is found within the walls of a vein, instead of being black, though, underground, I found it to be whitely.

I think I said that the material I found in shaft 21 was composed of iron oxides and clay and altered country rock, some small particles of quartz. Quite a good deal of it was made up of clay. As to how the clay compared with the material that I found in the four hundred foot level on the Bullwhacker,—this is oxidized and the other has been subjected to, or is below the permanent water level. That was whiter. This is brown in shaft 21. It is right at the surface at bedrock. I did not find any water there; it is above the permanent water level. In shaft 19 I found quartz, iron oxide, clay and altered granite. As to its constituents it is the same as I found in shaft 21, but not as to appearances at all. Of course, in shaft 19 the material was very damp indeed; in 21 it was very dry. I think possibly there is a fault just west of tunnel No. 30, because the ground drops considerably, or it might be the same condition as you

(Testimony of Samuel Barker, Jr.)

see now out on the main range,—a cliff formation. On the main range you find cliffs formed partially by eroding, partially by breaking away. Of course I do not know how the material was originally thrust up, or if it was covered by something before erosion took place. This main ridge of the Rockies was probably formed in the same way, and that upheaval or the subsidence, either one, would account for the formation of the cliff or the inequalities of surface that I have described. That there was a fault running north and south [568] in tunnel 30 would be one of the suppositions that could be entertained because of the condition that we now find there. The bottom of each one of these shafts is just a few feet below the surface of bedrock. You would not expect to find the granite altered there a great deal. The granite is sometimes soft near the surface of bedrock. For instance, I have seen the very same conditions at the British Butte, west of the Bluebird where a drift pierced the bedrock and the granite there was not particularly altered. The softened granite does not resemble clay very much, because clay is of an entirely different color than granite. If the fault is in granite, the material would be crushed, and within the fault planes would be crushed granite for the most part. There is a great deal of breaking of the country rock outside of the walls of the fault. It is not altogether the case that there is more or less of a staining near the surface of bedrock, on account of the iron that is in the granite. For instance, where the Baltic fault was encountered across the Veronica,

(Testimony of Samuel Barker, Jr.)

in the South Butte case, the Baltic fault across the Veronica had fairly well-defined walls and the granite on either side was intact at the surface and of an entirely different color than the fault itself. It often happens that the country rock is broken up in the vicinity of a fault, but that is not always the case. There are quite a number of parallel fault fissures to the Continental fault, and you also have parallel faultings to the Baltic fault, too. I only know of two others parallel to the Baltic fault, while there are quite a few in the ground in controversy.

I did not say that there is a staining at the surface of bedrock on account of the presence of iron in the granite, generally speaking. Some of the oxidized material in the vein that I find in shaft 19, might have come from the surrounding granite, for the main part, I think, though, from vein solutions. [569] In shaft 19 the granite is terribly black, in contradistinction to the oxidized material that you find in that vein. There is a greenish stain or blue stain there. I did not bring in any sample of that rock, but I found some slight green stain there, and I imagine upon assay that copper would show from the material assayed. The limits of the vein are not shown. The walls of the vein are not shown in the workings we have there. I do not think that the green stain might have come from the granite, in the same way that the green stain occurred in the north cross-cut from tunnel 31. The granite down there is entirely free from stain. The copper that I saw in the rock is very limited indeed, and I should say that

(Testimony of Samuel Barker, Jr.)

that would be the case, because it was in the oxidized zone. It would be limited in extent because you do not find it anywhere out there where I find the same kind of material,—that is, the green staining. In that locality you find the rich copper in the oxidized zone, but not in the same kind of material that you have in consideration in shaft 19. For instance, in the bottom of the Hornet discovery, that fissure there, as it is disclosed, is brown. You do not find any green staining in that, and that is right in the center of the deepest green staining that we have. If you found copper there you would expect it to be chrysocolla or the oxides. I said that upon assay, you would probably find copper values in this oxidized material. By an examination of the material with the naked eye, it is very hard to see any copper stain at all. I did not have that assayed. The vein there is not similar to the Mullins tunnel in appearance. I would not say that the material found in the bottom of shaft No. 19 was fault material. The clay might be either from vein solutions or from faulting. You get the same thing from both agencies. The clay is a kind of material that you would expect to find [570] in a fault, and I would expect to find rounded material,—that is, the quartz in a rounded material in shaft 19, if it were fault material, and what I saw was not of that kind.

I did not find any round material in shaft 21. I found streaks, though, in that shaft, in the bedrock that had both strike and dip, and the strike was to the west and the dip to the north, which is at right

(Testimony of Samuel Barker, Jr.)

angles to the course that you give to what you term to be the fault there.

As to the south cross-cut in tunnel 30, I do not know if it is the north wall of the vein or not. It has been attacked by mineral solutions, as shown by the sample I exhibited here. There is not enough work done there to prove that is a portion of the vein in shaft 21 or not. It should dip to the north to be a portion of the vein, if no other condition existed which would overturn it at the surface.

Q. From tunnel, the south crosscut in tunnel 30, dipping to the north, of course, at the hundred foot level it would be some distance north?

A. If that is the north wall of the vein, sure.

Q. If you went over to shaft 21, which is a hundred and five feet deep, you would expect to find it farther north, wouldn't you, because you have gone down to a lower level?

A. Presuming that what is found in the tunnel 30 is the same vein, yes. Shaft 21 is further south than the south cross-cut in tunnel 30.

Q. That would indicate that that is not the same vein, wouldn't it?

A. Well, from the developments that are there now, why it would be against the supposition. More developments might show lateral throws there to the north or to the south, which we now have no knowledge of. Taking things that are known, I would not say that it is the same vein.

[571] There is a small vein in No. 1. I found that in the north side of the shaft. That is about on

(Testimony of Samuel Barker, Jr.)

an east and west line with shaft No. 21. If there is a north and south fault between shaft 1 and shaft 21, there is nothing to prove which way the vein would be thrown in the ground that I can see now. If the vein was not dislocated by fault fractures, and if there was absolute continuity, shaft 21 would have to be farther to the north, in order that the vein occurring in shaft 1 should be the same vein as is shown in shaft 21. There is nothing yet shown by actual development to prove that there is any connection between what is found in shaft 1 and what is found in shaft 21. They have characteristics that are the same, that is, strike and dip. It is a general east and west strike and northerly dip. In shaft 21 there are two iron-stained streaks on the west side. Those two points of similarity would not be sufficient to justify the assertion that they were the same vein; you would have to prove it by work.

I do not know the width of the vein in tunnel 31; I think there is still more vein material to the north, in the Gulf cross-cut. The north cross-cut in tunnel 31 is about four hundred and twenty feet from shaft 21. The colors of the vein material are dissimilar. One is oxidized, and of course, they are both in the oxidized zone. One is oxidized in the brown color, and the other is very green. They are both above the permanent water level. I said in the north cross-cut in tunnel 31 there was fifteen inches on the footwall and three feet on the hanging-wall side, all very good ore. There is nothing like that in shaft 21. If they were on the same vein I would not expect to find

(Testimony of Samuel Barker, Jr.)

a greater similarity. Conditions change in veins. For instance, in shaft 9 you do not see the same conditions existing there as you do in the tunnel 31. It is not yet proven that it is the same vein; I am assuming that it is. [572] If the vein in the cross-cut from tunnel 31 is the same as the vein in 21, it would not follow that you would expect a great similarity of the vein material. It is quite a distance when you come to figure on veins,—four hundred and twenty feet, especially where one is only a few feet below the wash and the other is a hundred feet below the wash. The difference in depth below the wash might have the effect of preserving the mineral in shaft 21. It probably would have that effect because it is covered with solutions. A peculiar thing, though, in shaft 21,—you have the brown material and close to the surface in tunnel No. 31, you have the green material. There is a marked dissimilarity as far as appearance is concerned. That would be one thing tending to prove separate fissures. I did not take the strike of the fissures in the north cross-cut. I took one strike on the wall,—that was on the footwall,—northwesterly and southeasterly strike. I took the strike of a streak within the vein. This streak was not irregular at all. It could be traced from either side readily, on the bottom and up the sides of the opening. As to those streaks appearing on the wall of that cross-cut as you go north—they are not streaks, they are the fissures or the cracks in the vein itself. Some of the walls of those cracks are very irregular, as you can trace them down on the wall of the cross-cut, but

(Testimony of Samuel Barker, Jr.)

I took this one because of its irregularity. In this instance I should say that the strike of this crack within the vein would indicate the strike of the vein, because that is exactly what I was looking for, was something to give me a definite idea, or correct idea, of the strike of that vein. I wanted to get a true strike of that vein and this was the one that I picked out. If it was regular at the place I took the strike it might change its strike in a short distance, and so would the [573] footwall I took on the south, and any wall of a vein. I had the footwall exposed on each side of the opening, the same as I had in the streak I took the direction of. I took the strike of this streak in one place. I stretched a string from the bottom and I placed my instrument under that string, and then I read the direction, and I did the same thing on the footwall, so I would get it accurate. I had the exposure of the footwall in two different places. A line through those points would give me the strike between those two points, but because of the fact of the east and west fault being there and showing in that tunnel to strike the vein, or at the very points that you call the hump, why that would not get the true strike of that vein. There is an east and west fault there. That dislocated the vein. On the bottom you can see where the streak or the vein, as it is first encountered, is entirely cut out, and the amount of dislocation is not proven there. I do not know the amount of dislocation. It dislocated the vein, and it shows that it is discontinuous for a foot or two in the bottom of that

(Testimony of Samuel Barker, Jr.)

tunnel. In this case it is fixed, that with the two workings that you have in mind, you cannot get the true strike of that vein.

Q. And you cannot get the true strike from taking the strike of the crack within the vein, either, because the same dislocation occurs in the case of the crack, on account of the fault, that occurs in the case of the vein?

A. Why, that would be to the east, yes, where it is intercepted by the fault. The taking of the strike for a distance of two feet, no matter under what conditions you would take it, in that north cross-cut, would not give you the absolute strike of that vein. Taking into consideration the other facts in the ground, and on the other fissures, I say that the strike of that vein is to the northwest; only slightly removed from the [574] east and west line. In shaft No. 1, in the Rabbit Discovery and in shaft No. 9, well, not so much in shaft 9, the direction is slight to the northwest, and because of the fault that we find in tunnel No. 31, the true strike of the vein as shown there is not discernible, and we cannot get it until further work is done. In the north cross-cut from tunnel 31, you have two streaks of vein material there and they are dissimilar. I know that the vein exists to the east in that same tunnel, and I also know that a fault exists which throws it out of place. Therefore, I say that from that I cannot get the true strike of that piece of the vein as shown by those two workings, but I say that the general strike of that vein there is northwesterly and southeasterly,

(Testimony of Samuel Barker, Jr.)

by reason of the other fissures that I find immediately in that vicinity, and which I say were originally one or a portion of this fissure that we find in tunnel 31. The strike of those other fissures is northwest and southeast. I am not referring to the fissures in the south cross-cut from the Vesuvius shaft; I said shaft 1 and the Rabbit Discovery; and also the fissures that are found in the face of tunnel 31, or near the face. There is no dislocation of the face as shown in the Rabbit Discovery. There is a fault between the Rabbit Discovery and tunnel 31. These faults would have the effect of possibly twisting the vein shown in the Rabbit Discovery, although there is nothing there to prove that yet. The course of that vein is shown to me in the Rabbit Discovery, and until I had something to prove to me otherwise, I should take that as the real course of the vein. There is a fault between the Rabbit Discovery and tunnel 31. On your own map showing the Mullins vein, it does not seem to make any marked difference in the strike on that vein where it is dislocated and cut by faults.

Q. A succession of faults would have the same effect—that [575] is, if there is a fault between the Vesuvius and the Rabbit Discovery, it would have the same effect as a fault between the Rabbit Discovery and shaft 21?

A. Yes, and the parallelism of the veins would not be affected, that is, when the segments are taken into consideration.

In shaft No. 9 the depth of the wash as near as I can tell is about eleven feet from the surface of the

(Testimony of Samuel Barker, Jr.)

ground. The walls there are covered with timbers, but I said yesterday that the lagging had been removed from the east side of the shaft, at a depth of fifteen feet below the collar of the shaft, and that collar of the shaft is about two feet above the surface of the ground, and that I could see out underneath the timbers for some little distance, and, therefore, I would place the wash at no greater depth than eleven feet. I could see for about a foot. There is not any vein exposed on the east side of that shaft; I did not call it a vein.

I brought with me to-day the book I spoke of yesterday. Shaft No. 1 is the same as shaft No. 1 on defendants' exhibit in this case. I might say this is from a survey made by Mr. Pennington on March 5, 1901, which I believe is immediately prior to the hearing you referred to. Shaft No. 1 was three and a half by three and a half, filled. No. 2 was the same as No. 2 on Defendants' Exhibit No. 1. No. 3 corresponds with No. 9 on Defendants' Exhibit 1. I believe shaft No. 4 in the original hearing is now marked shaft No. 8 on Defendants' Exhibit 1. I do not find any number to the Hornet Discovery. It just says Hornet Discovery, shaft four by six, thirty feet deep. I do not find a No. 5 shaft in that hearing, by examining Mr. Pennington's notes. I do not find No. 6. I find No. 7. No. 10 in this case is to the southwest of the Hornet Discovery. It looks to me as if it might have been shaft No. 17—now 17 [576] on Defendants' Exhibit No. 1. The distance is not given from the Hornet shaft. I cannot deter-

(Testimony of Samuel Barker, Jr.)

mine whether it is 17 or 10, without platting it from these notes. I find No. 17 at the former hearing. I find 19. There might have been a 16 at the former hearing, but I do not find that number in these notes. Shaft No. 10 on Defendants' Exhibit No. 1 is the same as shaft No. 10 in the original hearing.

As to the veins disclosed in shaft No. 9, the Rabbit Discovery, the Vesuvius, tunnel No. 31, shafts 1 and 2, tunnel No. 30 and shaft 21—I think originally that they were the same vein, but by faulting subsequent to the formation of the vein, they have been dislocated so that their absolute continuity is destroyed at the present time. In my judgment at the present time they are discontinued portions of what was originally one continuous vein. That is what the condition is there. There is nothing there that would enable me to tell the length of each one of those broken pieces. There is nothing which would enable me to tell the extent of the dislocation. There is no development yet to prove what the displacement has been by the faulting. The direction of the throw cannot be determined until you have a development which will prove the amount of throw. In saying I think they may have been portions originally of one vein, I cannot connect them now on the ground. I do not find anything in the nature of drag which would prove to me which way the throw has been. The dislocation has been occasioned by several faults. There are several dislocations, but not by the same fault. In any particular case I would call it the fault. I find a fault in the tunnel 31; I find one in

(Testimony of Samuel Barker, Jr.)

shaft No. 9; I find one in the Vesuvius shaft, or working. I have never seen the fault west of tunnel 30; there might possibly be one there. There is nothing there to indicate one positively. There might be a fault west of tunnel 30. There is a small [577] crack filled with clay in the north end of the north cross-cut of tunnel 30, but it looks something like surface clay. It might be a fault, though. I think there are joint planes in the granite in the Vesuvius cross-cuts. I did not take the directions; I do not remember now what direction they run. Those joint planes are very small fractures that came about in the granite from tension, or torsion, due to strains, or cooling in the granite. I have seen Mr. Winchell's, and I have seen Mr. Finch's, and several other geologists' illustration of it. These illustrations would conform to my idea of the way the joint planes occur. I have never actually traced one out on the ground, but from evidence I have heard in cases, the greatest length of joint cracks, as I remember, would be some two or three hundred feet. The depth would not be any greater than that, probably. If they were opened enough they would sometimes become filled with mineral by surface waters or other cause. They sometimes become enlarged so as to admit of the deposit of mineral. I have seen such in my observations in deep mines underground. If they become enlarged and are mineralized I should call them veins. Your supposition that the mineralization is not sufficient to justify extraction, whether they would be called a joint crack or joint plane instead

(Testimony of Samuel Barker, Jr.)

of a vein, is entirely within the legal phase of the case. I am not supposed to pass on the legality of a vein, but if I should find a mineralized rock underground, even though it were an inch in thickness, but it had dip and strike, I would certainly call it a vein. In my definition of a vein I said if it would justify prospecting.

Q. You would not consider the joint plane that did not have sufficient values in sight to justify immediate extraction a fissure that would justify prospecting? You would [578] not find any mineralization beyond the depth of the joint plane, would you?

A. Well, that would be something that would have to be proven by exploitation and prospecting work, and, besides, there is not one case in a thousand where, when you have any kind of a vein, there is that in the vein which would bear extraction, commercially, because veins, generally, at the surface do not carry values, but it is with the expectation of finding values that the miner does the work on the vein.

You will find some values near the surface in some of the claims out there. You do not find it right near the surface in some of the claims. For instance, the Maggie did not have any values near the surface, and yet they had shipping stuff when they reached the sulphide zone. The values, so far as developed, have gone up at the surface, or very near the surface, the surface of bedrock. In those developments that is generally the case. Of course there are exceptions even in this ground.

(Testimony of Samuel Barker, Jr.)

Assuming that this was a joint plane and that it was mineralized, but that the mineral was not of sufficient value to justify extraction, I would under those circumstances insist upon calling it a vein. The mineralized matter that I would find would, to me, justify exploitation—that is, the spending of money in determining if I could find a vein either in depth or along its strike. If you knew absolutely that it was a joint crack, why, I would probably think twice before doing any extensive work on it, but when I find something mineralized in the ground and it contains good minerals and is good looking and looks as well as other veins that I have seen underground, why I surely would spend my money in developing it.

[579] Q. You know that there are millions of joint cracks in the Butte District, don't you, and that you pass thousands of them or hundreds of them nearly every day that you do not pay any attention to and would not, as a miner?

A. No, I would not, joint cracks, as you say, now, but you are supposing joint cracks with mineralization. These joint planes you speak of are so small that they are hardly visible to the naked eye. They are filled with oxidized materials because of descending waters and that iron has come from the granite itself, I take it. I saw joint planes in the vicinity of the Hornet shaft. There are some in the lower cross-cut to the north from the Hornet shaft. I did not see any of these joint planes mineralized. I did not find any mineral in the cracks in the granite in

(Testimony of Samuel Barker, Jr.)

the lower cross-cut from the Hornet shaft. I found at least three well defined small fissures there, all parallel in their strike and had practically the same dip. That is not what you would expect of a joint crack, but absolutely opposite to that, because the joint cracks, according to all authorities, are that they run in all directions. Now, these cracks, in my judgment, that you call cracks in the Hornet cross-cut, are fissures open in that granite, because of the faulting occasioned in that vicinity, and they were thereafter filled with minerals, and because of the fault fissures opened it is possible that from the granite the greater mineralization occurred in those cracks than you would see in the surrounding rock or in the enclosing rock. Those cracks dip in a northerly direction. They go from where you see them in the Hornet shaft, and at least one of them can be almost traced into the fissure that you find to the north called the Mullins fissure. It goes into it. You can see in the cross-cut where it actually goes to the hanging-wall of the Mullins fissure. It might be true, as you say, that the joint cracks, as they ordinarily [580] occur in the granite, it would not be unusual to find them a distance of twenty-five or thirty feet, three or more of the cracks running parallel with each other; but in those of joint cracks, you will see, where you have fresh surfaces of granite, you do not find three well-mineralized cracks or fissures like those found in the Hornet shaft or the cross-cut therefrom. There is a fault near those joint cracks. There is one east and also one west.

(Testimony of Samuel Barker, Jr.)

There is one east, and it is shown in the drift which connects with that cross-cut; and it is represented on the map, Complainant's Exhibit No. 15, by the blue line running through the Gulf Discovery. It is now six inches between walls, showing mineral between those walls.

Q. That is, greater mineralization than occurs outside of the walls immediately adjacent, except possibly in these cracks that you speak of?

A. Yes. I think that this fault enlarged those cracks somewhat.

Q. And you say that very likely, or at least possibly that the deposit of mineral in those cracks came from the granite?

A. I said first, though, that from the faulting, because the fault is very well mineralized—will prove my assertion that some of the mineral in these cracks or fissures came from that faulting. As to where the rest of it came from, that is, of course, getting back to theorizing again. I find it there, but possibly it did come from the enclosing granite. That was deposited by the circulation of the surface waters. I stated there were three of those cracks visible in that cross-cut. I should say the fault was vertical. I did not see it in the drift above at all, or in the tunnel, in the Mullins tunnel. I made some examination, but I did not find it. If it has the same connection as the other faults, it cuts the Mullins tunnel. I would not be able to say that it is not correctly represented on the map Complainant's Exhibit No. 15. The [581] trouble now in trying to trace that

(Testimony of Samuel Barker, Jr.)

fault to the north on the Mullins tunnel level is that there used to be an old cross-cut there, and that is filled. You cannot see the original ground. There is a portion of the back of the Hornet tunnel covered over, or lagged over lately. It was covered at all times during my inspection. That might account for my not having found it in the Mullins tunnel.

I do not think I stated that the Butte Folio stated that the faults in the Butte District were mineralized. Some of them are, to my knowledge, but I did not quote from the Folio. I said yesterday that the Folio told us that there was a deposition or enrichment due to the secondary faulting; allowed a free circulation of water to make a greater mineralization in this district.

In the Hornet shaft there is a streak of ore on the north side of the shaft at the bottom of the floor of the upper cross-cut. It can be traced for nine feet on its dip. It can be found on either side of that cross-cut, which is about two or two and a half feet, and it can be found in the Hornet shaft itself, on the north wall, for an additional distance of about four feet. The streak is from one to two inches in thickness. In places where you have copper oxide, or a good deal of copper oxide, three inches and possibly more than that. It can be traced along the north side of the Hornet shaft, and then, when you get to the cross-cut, along the west wall of the cross-cut. It shows about a foot and a half above the floor of the cross-cut. Its dip is about forty-eight degrees to the north. That is practically what is called half

(Testimony of Samuel Barker, Jr.)

pitch. Forty-five degrees would be half pitch—that is, the vertical distance and the horizontal distance would be the same. For every foot of depth you would gain one foot north. As you encounter it, a foot and a half above the floor of the cross-cut, it [582] would enter the floor of the cross-cut when you had gone a distance of eight inches north, providing that floor were level, but that floor has a great dip there. I did not measure the dip of the floor, but this streak was followed for some little distance along the floor of that cross-cut; it was mined for some little distance along the floor of that cross-cut, that is, it was on an incline up toward the Hornet shaft. I was not there when the mining was done. I cannot tell exactly how far it is visible on the floor of that cross-cut, but from the Hornet shaft I have traced it nine feet. Part of that would be along the floor of that cross-cut. I traced it nine feet altogether. Probably four or five feet of it, at least, maybe more than that, is on the floor of the Hornet cross-cut. As to what other place it is visible—I say it is the north streak in the lower cross-cut from the Hornet shaft. That lower streak occurs about seventeen or eighteen feet north of the Hornet shaft. This is beneath the level of the Mullins tunnel now. This would be on a level with the drift, about six or seven feet. It has a width of from one to two inches there. There is a distance between the lower cross-cut and the upper cross-cut where it is not disclosed at all. As to the distance, I am projecting it in order to connect with the crack or crevice in the

(Testimony of Samuel Barker, Jr.)

lower cross-cut, I should say about six feet vertically; and on the dip of the streak, would be very nearly ten feet. I do not know whether it strikes the Gulf shaft at any point. I do not know how deep the Gulf shaft was, below the level of this upper Hornet cross-cut. If that shaft was any deeper than the level of the upper Hornet cross-cut, it would be encountered and developed in that shaft. I was through that cross-cut in 1901. I do not remember whether the Gulf shaft was any deeper than the level of that cross-cut at that time. I only remember, in my examination, [583] that I could only look through the hole that was then made from the cross-cut into the Hornet Discovery shaft. I do not remember of even going through there. I entered that cross-cut at that time from the Mullins tunnel, and went in a southerly direction towards the Hornet Discovery. I did not enter the Hornet Discovery at that time from that cross-cut. I found that there was only a small opening from that cross-cut into the Hornet Discovery, not sufficient to allow me to get through. I should say about a day's work was necessary to be done in order to complete the cross-cut, and to extend it into the Hornet Discovery. I do not remember how far it was from the face of the cross-cut at this time to the Hornet shaft. I know there was a hole through there. If it was more than a foot or two, why a hole could be broken through in one day, I should say, to allow passageway from that cross-cut into the Hornet Discovery shaft. I do not remember whether this streak

(Testimony of Samuel Barker, Jr.)

had been taken out up to the time that I visited that cross-cut in 1901. Part of it at least could not have been taken out from my account of the condition of the cross-cut, when I went there in 1901. The absolute continuity of the streak as found in the Hornet shaft at that time, was not shown with the streak found on the floor of the cross-cut; but, of course, now, with the work done, that continuity has been established—the continuity on that fissure from the Hornet shaft to the floor of the upper cross-cut. In the bottom of this cross-cut between the Gulf and the Mullins tunnel there is a solid floor in that cross-cut. As to the appearance of the Gulf shaft having been sunk any deeper than that floor, the fill material, as I remember it, now showing is down at the bottom of that cross-cut, to the bottom of the cross-cut. This cross-cut goes alongside and west of the original Gulf Discovery, or at least a portion of it anyway. I should not [584] say that it is correctly represented on Complainant's Exhibit 15, because the evidence of the Gulf Discovery filling is now on the side of the cross-cut, and quite a good deal of it there, too. As to its being correctly represented on Defendants' Exhibit No. 1, that is a pretty small scale to show it on, but it does show some of the limits of that shaft, outside and east of the limits of the cross-cut. It is correctly represented on Defendants' Exhibit No. 1. In your exhibit it is shown entirely in this cross-cut, and if the Gulf shaft is filled, why the solid rock should be shown on each wall of the cross-cut, according to your exhibit, and

(Testimony of Samuel Barker, Jr.)

that is not the case on the ground, because you see filled material there now. As to whether I can tell from the appearance of the floor of the cross-cut there whether the Gulf shaft has been sunk any deeper there, I do not remember whether the material there is fill or not, in the bottom of that cross-cut. I remember that the mineralization is greater in the floor of that cross-cut than in the walls of the cross-cut, because the streak we have been talking about is in the floor of the cross-cut, south of this Gulf shaft, and immediately leaving the bottom of the Gulf shaft, the cross-cut inclines up as you go toward the Hornet shaft. There is at least a three-foot offset on the east side of the cross-cut that we are talking about, where it did encounter the Gulf shaft—that is, it is wider on the north side, and as you go to the south the cross-cut is contracted in size as to width. Confining my attention to the portion of the floor of that cross-cut north of the Gulf shaft, the mineralization is greater in the floor there than it is in the walls, in places where the fault that is found in the workings below there comes up and is opened by that cross-cut. [585] If the cross-cut was run north from the Gulf shaft, it certainly developed that streak which is the fault. The streak on the north wall of the Hornet shaft is disclosed for about nine feet. In the wall and in the floor I cannot tell you the dip beyond that nine feet until I encounter it again in the cross-cut underneath the upper Hornet cross-cut. I made some sketches to see what the upper streak and the lower streak would

(Testimony of Samuel Barker, Jr.)

do on that projection. Whether it continues on the same dip or whether it changes its dip, is a matter of pure speculation. As to whether it continues at all is not entirely a matter of speculation, because I find a streak with practically the same dip and in practically the proper position, by projection of the actual streak above in this lower Hornet cross-cut.

There is no question in my mind at all as to those streaks continuing, because the streak in the upper workings is continuous, and the streak that I find in the lower workings goes from the top of the cross-cut and can be traced on its dip into the Mullins fissure. I admit that I cannot see it between the two cross-cuts. I do not think it a matter of speculation as to whether or not they connect, because the evidence I find in the ground proved to me that they must be the same streak. There is a possibility of my being mistaken. I should say there was no possibility of those being joint planes. I have never seen any joint planes that looked like the streaks I find in these cross-cuts. It does not have the appearance of an enlarged joint plane, or crack in the granite. There is mineralized granite on each side of that crack in the lower cross-cut; just as other materials are solid rocks. In the upper cross-cut the material is more or less broken. It is directly underneath the wash. It has the appearance of being [586] broken, because it is so dry, and the dust and such have been coming down over it and it is more or less crumbled. I should say you would have to use powder; not clear down to the bottom of

(Testimony of Samuel Barker, Jr.)

that upper cross-cut. Around the top of that cross-cut the material is such that it can be removed with a pick, but I will wager, if you go a few feet on either side, where it has not been shattered by running this working, you would have to use powder.

Q. You do not find any cross-cut, either in the floor or in the wall of that upper cross-cut, such as you find in the lower cross-cut, do you? There are no such well-defined cracks in the upper cross-cut as there are in the lower, are there?

A. Yes, sir, the one that we are talking about. And in the upper cross-cut, I can find thin lines of quartz in places, having nearly a perpendicular dip, on the west side of that cross-cut,—those are outside of the limits of the Mullins fissure. I do not remember that in my former testimony I referred to this streak on the north side of the Hornet shaft as being a mere kidney or stain, in 1901. I can find pieces of rock, heavily mineralized, outside of the Mullins fissure, as I can in it; and I can also show you at least four inches of as good vein quartz as any miner, or geologist, saw, outside of the walls of the Mullins vein. I should say it was two feet to the north, and I believe with work you can show more than that. That is just west of the winze,—or just west of the cross-cut that we are talking about. It is not in the fault. I can see at least four inches and there might be more by doing work there. It is on the north wall of the Mullins tunnel. It is outside of the well defined wall of the Mullins fissure. And I can also show you as good vein material outside of the well

(Testimony of Samuel Barker, Jr.)

defined walls of what is called the Mullins fissure in [587] the lower drift, as I can find inside of those walls. I am talking of the sample I introduced here. That was taken at the east end of the Mullins drift, underneath the Mullins tunnel, and that sample was taken outside of the shown well-defined wall of that fissure in the footwall. When I went out there in 1901 I entered through the Mullins tunnel. I do not remember how much work was done at that time beyond this cross-cut. You see I did not make the surveys at that time. My examination, as I recall it, was entirely confined to the material that I found between the Mullins tunnel and the Hornet discovery in that cross-cut. I have since examined it, and can tell the kind of material that I found within the walls of that fissure. From the examination there I find a rich streak of ore within the walls of that fissure; I should say it was about continuous. The only working that I have examined below the Mullins tunnel is a working called the Mullins drift, immediately below that tunnel. In this drift the material that was taken out was removed from it within the walls of this fissure, and outside of the walls of this fissure. The fissure itself is only about a foot or eighteen inches wide, and the working is at least two and a half or three feet wide, and because of the work that was done outside of the walls of that fissure, I found the ore beneath the footwall of the Mullins fissure, and certainly I should say that could be shipped as commercial ore. I make the statement that the work extended beyond the walls of the

(Testimony of Samuel Barker, Jr.)

fissure, because I saw the walls of that fissure there, and the work done shows them and also shows work done in the footwall—to the north of the footwall. In this drift the footwall has been removed. In the face you can see the two walls. I should say that in removing the footwall they did not do it in such a way as to leave a smooth surface, practically parallel with the hanging-wall. It is very irregular, indeed. The wall [588] that remains there, that is corresponding to the footwall, is an irregular wall in this drift. On my map Defendants' Exhibit No. 90, I have not undertaken to represent the streak of ore within this fissure. I have attempted to give the walls of the fissure as they show on the ground. What you designate as a break just to the left of the winze is where I cannot see the fissure in the bottom of the tunnel. I do not say that the vein is broken there. It continues on, but I cannot see it. The fissure west of the point where I have indicated goes through the wash there. It is lost because of coming in contact with the wash. As to my encountering it at any other place westerly in my examination of the ground,—I climbed up in there, and looked very carefully, and I could not find it. Of course, if the Mullins tunnel were cleaned out on the bottom, I could see it, as farther west in that bottom, but it is now covered and the signs of that streak are not visible. I did not find this fissure to the west of the point that I have represented it on this map, at any other place than within the boundaries of the ground in controversy, unless the workings on the vein that

(Testimony of Samuel Barker, Jr.)

is shown in shaft 19 would be the same thing. Of course, there is quite an intervening distance there, and that would be a matter of proof. I do not know whether it is the same or not. I made an examination of the cross-cut tunnel 37. That runs underneath tunnel No. 34; it goes over and connects to a shaft that I find in the cut leading into the Mullins tunnel or tunnel 34. The granite does not show at any place in the back of the cross-cut there. That cross-cut is partially filled on the bottom, and only a foot in some places left, and in some places little more, is the solid rock exposed. The caved material entirely covers the bottom from one end to the other. The exposure of a foot of bedrock is on the east side of the cross-cut, [589] and extending for the north twenty feet of it. For instance, where you enter this cross-cut, you slide down on caved material, and until you get into the cross-cut for some feet, you cannot find, or you do not see the solid bedrock, and then, for the total distance north to the place that intersects the shaft, only about a foot of the bedrock is exposed there. In two places in that exposed foot of bedrock I saw what I should say was very good mineralization; occurring in the form of chrysocolla in a more enriched form than you find in the workings around the Hornet cross-cut, and the Mullins tunnel to the east. It shows on the east side of the cross-cut, the mineralization; from six to twelve inches in places,—in height. It is impossible to tell whether it is in a regular shape, because of the limited space that could be examined. I saw

(Testimony of Samuel Barker, Jr.)

no well-defined fissure of any kind there; it would be impossible to tell what was in there, until the working should be cleaned out, and the walls examined, and the bottom of the cross-cut examined.

As to Defendants' Exhibit No. 57, the sample you show me, originally I should say that was aplite, but it certainly is very much altered at this time, and it is what a miner would call vein material,—vein quartz. I should now call it vein quartz, because of its alteration. I saw material like that in shaft No. 2. I saw worse than that and I saw very much better than that. I did not say that the aplite in shaft No. 2 was a vein. I call this vein material because the solutions have altered it. Because that aplite has been altered by solutions to some extent, I would not call it a vein. I do not think that this material came from a vein. If you call the aplite a vein, why it would have a north and south strike, because the aplite does run in that direction. But there certainly were [590] vein solutions going through that territory, and it has altered the aplite. If I located that, I would have to locate it north and south, from the evidence I saw in that shaft. I would not locate the aplite I saw there as a vein, although I say some of it has been altered by solutions.

This, Defendants' Exhibit No. 5, I should say that was vein material. Of course, some of the parts of that rock is more highly mineralized than others. As to the difference between this rock and the one you showed me last—this looks as if it had originally

(Testimony of Samuel Barker, Jr.)

been gray granite, to me, and not aplite. As to the evidence of mineralization, on one of the faces of it you see quartz and iron oxides, and where the end is broken you see the same mineralization in the rock itself as shown by the black specks. There has evidently been a crack in this granite and this sample has been taken from the side of the crack forming part of the wall of the crack, but the mineralization has spread out into the material itself. I would not say that there has probably been a little deposit of mineral by surface waters in this crack, and that that is what I saw on the face of that rock which has a dark appearance, because I find good-looking vein quartz in this, associated with the oxide of iron. From the alteration of the quartz in the granite you would have vein quartz. With this evidence of mineral, I would call this vein material. I would say it came from a vein. I do not know where it came from. The sample you show me, Defendants' Exhibit 56, looks like oxides of iron and quartz to me. I would pronounce this quartz and not aplite. On the only broken faces visible here, there is a very good mineralization showing in that rock. The whitish appearance there does not indicate aplite to me. All the appearances of the fresh surfaces there show very good quartz to me.

As to Defendants' Exhibit 30, the three pieces that I examine [591-600] seem to be iron oxide, and one piece quartz. Now, if it were aplite, why I should say that the quartz would be whiter than this, and it would show no little bugs like this piece has.

(Testimony of Samuel Barker, Jr.)

Alongside of the iron oxides in the other two pieces there might be a little granite, but has been terribly altered. It has been altered by mineralized solutions, but I do not know whether surface or deep-seated. I should think it had come from a vein. Defendants' Exhibit No. 6 I should call a piece of aplite. As to Defendants' Exhibit No. 31, two of the pieces I should call quartz. The other piece, aplite which has been slightly altered. Two of the pieces are vein material. I should say the quartz came from a vein. I should not say the aplite did. As to Defendants' Exhibit No. 22, the two pieces would seem to be rather complex to me. The evidence of aplite and gray granite are found in both, and also, especially on one end of one of the pieces, a great change in the material,—that is, it shows iron oxide to a very small extent, of course. The other piece is altered granite and aplite. It might be called vein material from its excessive alteration, from its being originally granite. If I found that material underground, I think I would be justified in doing some work on it, to prove what it was. Of-course it would depend on where I got it from, and if I could really see it underground, to see what I would do with it,—but bringing those two pieces and not saying where they came from, I would say they would justify work. I would have to see where they came from to tell.

I have been acquainted with the ground in controversy in this case for a long time. In 1891 I do not remember of any quartz operations being carried on

(Testimony of Samuel Barker, Jr.)

in that locality. The Pittsmont was not in operation at that time. It has been in operation I should say all of eight or nine years. In 1901 I should say [601] the nearest quartz mine in operation to the west would be the Silver Bow. That is on the west side of Silver Bow creek, and is within the district that has been referred to here as the Butte Hill; and also referred to as the Anaconda Hill. Of course, I know of some work being done on the Homestake and Clinton Tunnel, but of course I do not know of the dates. Those are not any nearer to the ground in controversy than the Silver Bow. The Homestake is about a mile from this ground. As to any quartz mining operations being carried on on the east side of Silver Bow creek in 1891, in the Butte district, or in the vicinity of Butte,—possibly the Clinton Tunnel or the Homestake or the Major Budd were at work at that time. I cannot say whether they were or not surely. They are in Park Canyon. They are not in operation at the present time. Of course, a great deal of work was being carried on at that time by prospectors and by men doing work for patents to their claims. I presume you mean deep mining. I think there was a shaft being sunk on the Northwestern about that time. They were sinking down to prove the ground. They did not have any ore right at the surface. They sunk perpendicular shafts. The ground which immediately adjoins the Butte and Boston placer on the west, for a distance of a mile at least, was located and patented as placer ground. There is a strip of

(Testimony of Samuel Barker, Jr.)

ground there with an easterly and westerly direction, including the Butte and Boston placer, which covers at least a mile and a quarter, that was patented as placer. It is not true that the ground which lays on the west of the Pittsmont ground north and south for a distance of two miles, was located and patented as placer north of the Pittsmont ground is some placer and some homestead entries. The claim immediately on the north of the Pittsmont is the McQueen placer, survey 1488. The Pittsmont ground is known as Application No. 888. The McQueen placer extends north [602] for a mile distant. North of the McQueen placer the Greendale placer and the Extension placer make up the distance of almost a mile, but just to the west of the Greendale placer are the additional homesteads I spoke of, the Sawyer and Newell homesteads. That is not more than six hundred and fifty feet from the Pittsmont ground. It is over a mile from the Pittsmont shaft. I know what led to the discovery of quartz in the Pittsmont ground. It was because Mr. Heinze and the Silver Bow Company and the Washoe Company had developed an east and west vein of high-grade copper, which on its extension would go into the placer No. 888. That was on the west side of Silver Bow creek that this development had taken place, and underground it extended under Silver Bow creek. In part it is correct to say that it was not until after that discovery that there was any great activity in quartz mining on the east side of Silver Bow creek. A great deal of work had been

(Testimony of Samuel Barker, Jr.)

done, though, east of Silver Bow creek, which did not depend on the discoveries of the veins in the Pittsmont ground, because the workings done during the years of 1905, '6 and 7, in a great measure, were on this north and south continental fault. I cannot tell you when the discovery inside of the lines of the Pittsmont actually took place; I can tell you about,—beginning with 1895, and from there on,—and, of course, there were other workings there, what is known as the Silver Bow No. 1 shaft, that led to the taking over of not only the McQueen placer, but also the placer No. 888. For instance, there is a long cross-cut in the five hundred foot level of the Silver Bow, and that cut a great number of good fissures which had an easterly and westerly strike, and, of course, it was supposed on the continuation they would go to the east and into the McQueen placer, and also the [603] ground that the Pittsmont is now working on with its shaft. This prospecting prior to 1895 was not along near the continental fault. It was to the east of that; it was to the east of the continental fault, excepting in the case of the Lily and the Amazon and Altona. What attracted the miners alone there was partially this chrysocolla and cuprite which occurred near the surface, and the boulders of chrysocolla occurring throughout the wash, and because it was the only territory left in the Butte district which had copper prospects,—that was the reason that different companies were formed at that time to do development work in the district known to be copper and

(Testimony of Samuel Barker, Jr.)

which was not already owned by the big companies. Along about 1906 or '7 there were a great many companies organized to prosecute development work along in that vicinity. Quite a distance north was the Butte and London. There was also the North Butte Extension; the Colusa-Leonard Extension. They all did work to the north of the ground in controversy in this case. I do not know how deep the Butte and London sank their shaft. I think it was either a thousand or eight hundred feet. As to their running cross-cuts, they must have done a great deal of work, from the amount of excavation on the dump. I think the Colusa-Leonard Extension Company prospected to the six hundred. I never saw any cuprite or oxides of copper there, and I made the surveys and examination of the Colusa-Leonard. I do not know how deep the development on the North Butte Extension was. None of those companies developed any ore bodies of any considerable size that I know of. They ceased operations some time ago. They are not working them now. The Butte and London sold its machinery and pulled the pumps. The Colusa-Leonard did the same. I think the North Butte Extension's machinery is still there. The Butte and Bacorn was still [604] farther north. They did a lot of work. Nearer the ground in controversy there was some work done on the Birtha and the Pacific claims. That work has not been carried on for some little time. North of that was the Bullwhacker. I have already testified that work on there ceased a good many years ago.

(Testimony of Samuel Barker, Jr.)

There was also the Altona and the Amazon companies,—still farther to the south, but along in the foothills of this main ridge of the Rocky Mountains. I have never been down the Altona or Amazon. They did extensive development underground. There were also the Six O’Clock and Greenleaf properties. The Six O’Clock was more than a mile to the north of this property. The Greenleaf is just a trifle less than a mile. Of course, these properties were reported on by many eminent mining engineers, and that is the reason developments were done underground. For instance, Mr. Winchell made a report on the Butte and London, and that is the reason the operations were started out there, and because it was adjacent to the known productive copper territory. It was on a line of some east and west veins that run through the Butte Hill. If you went on the theory that they extended indefinitely easterly, they would pass through this ground.

Q. However, the development work showed that if they did pass through there, they were not mineralized, or at any rate, they were not heavily mineralized?

A. No, sir. That is the fault with the limited amount of development work that has been done on these claims. For instance, the Butte and Boston Company had developed one continuous shaft of ore sixteen hundred feet across the flat. Since the boom the Pittsmont Company have worked from the Silver Bow workings for four thousand feet, up to within a few hundred feet of this claim, and if those veins

(Testimony of Samuel Barker, Jr.)

continue on their present [605] strike, they would come into the Butte and Boston placer, or underneath it. The companies have ceased operations, not because they did not have any ore particularly, but because the ventures were capitalized for only certain amounts of money and the money raised was spent for the development done. If more development work is done there, I should say that good mines will be found, and ore shipped to the smelters. Now, as far as the Greenleaf is concerned, it is one of the Amalgamated properties. It took a great deal of coaxing and talk by Mr. Adams to be allowed to do any work on that claim. The reason for that was this. The Amalgamated have territory large enough now to keep open with an immense amount of copper already developed and who go out on the east side and open up new workings, while they have enough ore to swamp the copper market now, with their developed mines.

The Butte and London Company sank a shaft twelve hundred feet deep and ran their cross-cuts north and south, and did not encounter any of these ore bodies, but, of course, they have only a vertical depth beneath the wash of four or five hundred feet. No one knows of the existence of these ore bodies at great depth; the Butte & London Company did not know it. I say that, with work, I think that ore bodies will be developed. For instance, in the Modoc mine, where we have the large quartz porphyry dyke, the largest in the Butte camp, in the first,—or the old days of Butte, that was one of the most promising

(Testimony of Samuel Barker, Jr.)

copper mines here, and yet the vein, or the values of the vein bottomed. It was a peculiar thing, that a great deal of the ore in that vein was peprahedite, which is the gray copper, and not the typical copper that you would expect to find along the quartz porphyry dyke, which Mr. Winchell says is the reason for our copper deposit in Butte, and that mine was closed down [606] for ten or fifteen years, and later by development, a very fine body of ore was uncovered in that property, and there are many ore deposits that are not now being worked in the Butte camp that will be some day, because of greater developments being done. As to this underground working in the Pittsmont, they have drifted east and west for a distance of four thousand feet, but whether that is in ore or not, I cannot tell you, because I have not been in the ground. Of my own knowledge, I do not know whether there is an increase or decrease in the ore values as they go east on the vein they are working. I do not know of any other property except the East Butte or the Pittsmont Company operating at the present time on the east side of Silver Bow Creek.

Redirect Examination.

(By GENERAL NOLAN.)

The WITNESS.—This continental fault has been explored from Park Canyon on the north to a point probably two thousand feet south of the Butte and Boston placer—that is, a total length of about a mile. I have seen the effects of the fault upon the leads running east and west as they come into contact with it, as exposed by workings, and I should say it had the

(Testimony of Samuel Barker, Jr.)

effect of enriching the already existing easterly and westerly veins. As to the effect it has had upon the veins in the way of displacing them or changing their course,—the east and west veins have been dislocated, but I do not know of their being any particular change in their strike or direction. As to the amount of dislocation that has occurred where the fault intercepts them, I have never been able to ascertain. The continental fault is the largest fault of the series of parallel [607] faulting in this vicinity. All of the parallel faults that I know of exist to the west of this continental fault. Work has not been carried on sufficiently to determine how many of those parallel faults there are, because there is no continuous working from the continental fault to the west, for any great distance, to prove what the exact conditions are underground. The workings have not been such that you can tell how far distant west the first fault is, and how far the second, and how far the third, and the fourth and so on. It is not ascertainable now how many of those parallel faults there are. I know of some that have been developed on the ground in controversy that are parallel as to direction as to the continental fault. I stated that some of the faults developed in the ground in controversy have the effect of causing a displacement of the vein. The continuity of the veins cut by these faults is destroyed. I do not mean by that that where the faulting takes place there is an end to the vein on its strike. For instance, we have a north and south fault, a vein is found on the west side of that fault, on the continuity or direc-

(Testimony of Samuel Barker, Jr.)

tion of the vein produced in an easterly direction the said vein is not found on the east side of the fault, but it does exist either to the north or to the south of that continued direction on the east side of the fault.

Q. And where the continuity of the vein is interrupted in that way so that it is shifted north or south, where the strike is east and west, what do you say as to whether the vein thus shifted ceases to be a part of the original vein and becomes a new vein, or whether it remains a part of the original vein?

A. The two pieces of vein, when found, the one on the east [608] side and the one on the west side, will prove to have been originally the same vein, because in the development the miner will find those things existing that go to prove the continuity of the vein itself, even though dislocated by the fault,—that is, by physical characteristics of the vein and by what is known as drag along the lines of the fault, which show in what direction the throw has been.

A very slight displacement of the fissure in the Mullins tunnel, is caused by the fault that is now seen just east of the Hornet discovery shaft. I have no difficulty, in the case of that displacement, in connecting the vein east of the fault with the vein west of the fault, as both being one and the same vein. For instance, near the end of the Hornet tunnel there is a fault shown there with a slight displacement of that fissure, and I have not any doubt but what the portion of the fissure to the east of that fault was originally the continuation of that which is found to the west of it. There is no difficulty, as far as I

(Testimony of Samuel Barker, Jr.)

can see, in any of the faults that you encounter in this ground in controversy, where a displacement of the vein known as the south vein, has occurred, in establishing a connection between the two portions of the vein, where the fault operates. But in the north vein, the continuity of the vein is not yet proven,—that is, the portions dislocated by the fault do not show continuity as yet, because of lack of work on the ground. I have reference to faults, for instance, in tunnel No. 31. From my examination I do not find the piece of the vein, or the fissure, I should say, which is opened by the north cross-cut in tunnel 31, and thereafter to the east in the same tunnel, with any vein to the east of that with the same characteristics or size.

Referring to Complainant's Exhibit 17, the blue line running to the north and south represents the fault I am speaking about [609] and this red upon the map represents the vein as it comes up to the fault plane. I have not found any evidence of that piece of the vein being found east of the fault in tunnel 31. There is evidence of the existence of a vein east of that fault plane; as I said before, the portion to the east,—for instance, in the Rabbit discovery shaft, in my judgment, was at one time, before the dislocation by the faults, a portion of this fissure. I stated that the faults were of a subsequent date to the true vein fissures. You could have what are known as strike or thrust faults, they are practically parallel to the direction of the vein itself. In the Gagnon I have seen what I should call a strike

(Testimony of Samuel Barker, Jr.)

fault, that opened the vein, or the fissure, and there was a greater mineralization thereafter in that fissure because of that strike fault. Of course, it was after the vein fissure had been burst open. You are able to tell that those faults are of later date than the vein fissures—that is, than the true vein fissures, because the vein fissures are cut and dislocated by the faults. You are not able to tell how much later the fault occurred than the true vein fissure. That is theorizing to the greatest extent, if you tried to prove that time of faulting as related to the creating of the vein fissure. As to when that mineralization occurred of those vein fissures, I should say beginning at a time subsequent to the granite and aplite being thrust up from deepseated places in the earth's crust, and then the mineralization of the vein fissures going on continuously from that time till now. As to when it was that those faults occurred, some of them might have been formed by the readjustment of the mountain masses to the east, which is the back bone of the Rocky Mountains here, also by the uplift of the rhyolite, known as the Big Butte. I have no doubt that that period antedated 1864, when Congress [610] came to legislate in reference to these veins.

I do not know as to the dip of the continental fault, excepting what I have seen on the maps, and I have found in my office where the Birtha was worked, and it showed a slight westerly dip. Now, I don't know whether that is the dip that would be carried down or not, because at the surface we find veins and sometimes faults change their direction

(Testimony of Samuel Barker, Jr.)

right at the surface. If in a normal fault the dip is to the east and the dip of the vein is to the south, it would throw the vein to the north. In the case of a fault there is simply a movement up and down. The dip being to the east, the ground east of the fault being tilted up, would be a reverse fault. The normal action of faulting would be that the one piece or mass of ground would slide on the incline and in this instance it would be the eastern portion of the ground faulted that would slide down on that incline, which would give it the normal action. If, on the other hand, the under mass should come up along that incline, that would be what is termed a reverse action, or a reverse faulting. I have a little sketch here that I think will explain it to you. The red line in this instance represents the vein, and the line along which the paper has been torn is the fault, and the fault shows by the arrow to be dipping to the east. This is the paper together before the fault occurs at all. The fault is of later date and we have the red line regular in its course. The faulting occurs northerly and southerly. Moving the paper,—the fault is dipping east, therefore to have a normal condition, the sheet of paper on the east side would drop down. Now, by erosion the portion that was left above the ground is eroded down to the level of the faulted piece which now lays on the table and on its dip it would bring the vein to the south of where it now exists on the east side, or reversing it, the vein [611] on the east side would be to the north of where you find it on the west side. I have now

(Testimony of Samuel Barker, Jr.)

brought it right in a line. You have the vein in a direct line, and the sheet of the paper that Mr. Berrien holds between the two sheets that I hold in my hand, which represent the line of fault, is the plane of the fault now. Now, to have a normal condition, the portion on the east side would drop down on that inclined plane. That would be the natural thing for it to do. Therefore, it is called a normal fault. Now, I have it down here, and this portion remains where it is for the time being, until erosion takes place. Now, with the vein dipping as it does to the south, as this material on the west side is removed, it would bring the vein to the north on the east side, or to the south on the west side of the fault. We have the ground in its natural condition without the fault occurring at all.

Q. But we have the convulsion, whatever it may be, that occasions the fault,—that occasions the movements,—and instead of sending this portion down, it sends it up. Then what would be the effect? It would be sent up, wouldn't it, if as a matter of fact its dip was to the east?

A. Now, Colonel, you have the east side going up on the inclined plane, instead of descending on it. Now, the west side would remain the same,—that is, level ground. Then erosion would take place and the east side,—all the material on the east side will be cut down to the level of the material on the west side. Now, using the dip of the vein, and eroding that material to the level as found on the west side, you would have the vein to the north on the west side instead

(Testimony of Samuel Barker, Jr.)

of to the south, because of the reverse action of the fault.

Q. And you said something upon your cross examination about the destruction of the west side of the wall of the fault in every instance, didn't you, or in this instance where the movement [612] was to the south? Now, if, as a matter of fact, instead of the east side descending when the fault occurred, it ascended there would be a breaking on the east wall instead of the west wall of the fault wouldn't there, because it would be on the east side that you would have the movement that would have a tendency to shatter the wall?

A. Oh, I do not think there would be any great destruction of the walls there, because in the first instance it would be just a mere plane. I do not think the faulting,—in my opinion, the faulting does not occur at one moment. It is a gradual movement throughout a great period of time, because that is proven by the amount of fault material you find between what we now see as the walls of some faults,—that is, where you have but little material between the faults as you now find them, it would show a little amount of displacement. If you have a great deal of material, it would show that there was more grinding action by reason of the two masses of ground moving on each other, and, therefore, I should consider a greater fault movement would be occasioned where you found the greater amount of ground up material, or fault material. Now, of course, if you have the continental fault dipping to the west

(Testimony of Samuel Barker, Jr.)

instead of to the east, then you have the two segments of the vein exactly opposite to the conditions when you have the continental fault dipping to the east. There have been cracks opened out at right angles to the continental fault, and these cracks would have an easterly and westerly direction. The fissures already there, and also openings that were occasioned by this faulting, allowed a freer circulation of mineralizing waters to spread out into the rock mass immediately adjacent to the continental fault, and that is the reason we have the replacement,—secondary replacement of the material directly west of that fault. These things that I have been talking about [613] did not occur since 1864. The vein fissures in this district were there, were in the ground and were partially mineralized before the faulting, and especially the continental fault, and thereafter, or for the period of faulting, there was a greater enrichment of the fissures themselves and also of the mass adjoining those fissures. Geologically speaking, that secondary enrichment or replacement occurred millions of years ago.

I remember testifying in speaking about the depth of the bedrock in tunnel No. 30, and the depth of the bedrock in shaft No. 21, that there must be a faulting in that neighborhood to account for that abrupt descent of the bedrock. But I also added, or the condition prevailing that we now see on the main range where we have cliffs. I do not understand that in the case of the deposit of this granite as it exists, when it became a solid mass it was level and perfectly

(Testimony of Samuel Barker, Jr.)

level throughout its entire extent. I should say it is very irregular indeed, as to its proper apex, because being thrust up as it was, it sometimes, or it did, follow the lines of least resistance, and in some case you would find the earth's crust thinner than in other places, showing irregularities. It does not follow that because of tunnel No. 30, you have the bedrock with the elevation which it has, within about ten or fifteen feet of the surface, and a hundred and fifty feet west of there the bedrock is about a hundred feet from the surface, that that inequality is due to a fault. In answer to Mr. Shelton about chrysocolla and cuprite being insoluble in water, I stated I did not know about the chemistry of these elements. I do not understand that the conditions existing over there now, with this ground as it is there, was always the condition there. The condition that we find it now was brought about during different periods of life. As to the whether that is available [614] there now,—water which might carry these elements, has the same constituents that might have existed there at the time when these deposits were made,—I think the conditions are absolutely different. If this secondary enrichment has been occasioned by descending rather than by ascending waters, I do not know where it was that the water got this copper to deposit and to distribute this chrysocolla. Of course, theorizing, some of the mineralization might have been very deep-seated and been occasioned by ascending waters, and some of the copper might have come from the waters percolating

(Testimony of Samuel Barker, Jr.)

under great height and pressure through the surrounding granite mass, and take therefrom the copper minerals and redeposit those in the fissures and nearby, where the free circulation of water could exist.

Q. And having in mind the testimony of Mr. Winchell in reference to the coloring by chrysocolla of that territory on the east side, you already testified about similar conditions existing around the neighborhood of the Parrot mine. I will ask you whether or not you testified before you found by sample that this coloring extended beyond the period of the Parrot property. A. Yes, sir.

I brought a sample in here this morning. I find evidence of chrysocolla or coloring in that sample. I find chrysocolla in the sample that I brought here this morning. The rock itself is gray granite. There has been some alteration of the granite, there has been a replacement by copper, now in the form of chrysocolla. This sample was taken from an excavation that is now being made (producing sample) immediately in front of this Federal building, and that fact recalls to my mind that on the west side of Main street and directly opposite this building, the same chrysocolla is present in what was originally the [615] granite and by excavating to-day, I think you could find it all along the west side of Main street, immediately opposite this Federal building.

(Sample offered and received in evidence, and marked Defendants' Exhibit No. 94.)

I have never seen any placer operations carried

(Testimony of Samuel Barker, Jr.)

on within the limits of those placers that I testified about, namely, the McQueen placer, and other placers in that neighborhood.

I was asked as to how it was that the quartz veins were discovered on the Pittsmont property and I stated it was because of the fact that west of that ground and some distance, a rich vein was uncovered, having an easterly and westerly strike. As to how that could have anything to do with this ground, being off the ground itself,—because projecting the direction of the vein so found and discovered to the west, that direction would take the vein into the now Pittsmont ground, and that was the real selling agency of the Pittsmont ground itself, because numerous experts were brought here from both east and west and taken down and shown the vein showings underground. There was absolutely nothing on the Pittsmont at that time to show an ounce of copper in veins. The whole showing laid to the west, in what was then the Butte and Boston Company's ground. The vein was disclosed, I should say, a hundred feet west of the Pittsmont property, in the south placer claim that the Pittsmont acquired, known as the Murray placer, or Mineral Application 888, but in the case of the McQueen placer, at least a half a mile away, that is, the McQueen was a half mile east of the workings on the Silver Bow, which showed the veins underground there.

Finding this vein off this Pittsmont ground, and having an easterly and westerly strike, you could tell where to go upon the Pittsmont ground to the east of

(Testimony of Samuel Barker, Jr.)

there with the expectation [616] of finding that lead, by drawing a line through the known vein, projecting that to the east into the Pittsmont ground, and then carrying on operations along that projected line. As to that being done for the purpose of determining the strike of a lead,—that is the only way you can do it. When you have a vein such as was found in this case, why you must do it by projection. The strike of the lead as known to you cuts a figure in this projection that you make into this unknown territory, because if it did not project into the East Butte ground, why that ground will have no value for lode mining purposes at all. The very existence, or the dollar and cent existence, of the Pittsmont depended on where the veins would go on their eastern projection from where they were already found. Experts are not always correct in their prognostications with reference to the possibility of the lead extending beyond where it was uncovered. Sometimes there is something found in the ground which was not anticipated, and the calculations made by the expert are made futile in that case. Of course, sometimes, or at all times, the expert as you so call him, must take into consideration those things which he finds both in the ground and in adjoining properties. If the developments in the adjoining properties are great, those developments are the things that guide for the most part. Of course, in the north district, the guiding element at the surface was against the proposition of finding copper ore at depth. By that I mean the Jessie and the Badger State and the Rain-

(Testimony of Samuel Barker, Jr.)

bow veins,—the veins at the surface were small, very small fissures,—excepting in the case of the Rainbow, containing manganese,—the black oxide,—at the surface, and where any working had pierced to water level, the carbonate, or rhodocrosite. Of course, from the conditions found in this north district, because of this silver at the surface, a great number of experts [617] said that no copper would be found underground, and yet to-day the Badger State, which is a considerable distance north into this territory, is one of the largest copper veins in Butte. I have testified, in speaking about this territory in the neighborhood of this ground in controversy and the quartz claims that have been located there to the north and to the south and to the east, that there were no extensive mining operations on any of those claims now being carried on. The fact of no operations being carried on is not due to the fact that there were no leads upon the ground that could be operated successfully and profitably. There are very good showings to the north, east and south of this ground. The condition, as I explained heretofore, is that a great number of the claims have individual ownerships,—that is, the ownership to each claim is divided among one or more owners, and it is very hard to get all of those ownerships together to form a company to do work; and, again, most of the best showings on the east side are now owned by the Anaconda Copper Mining Company. I know of several places that I would be willing to lease right to-day, especially for the copper, not for the silver at all.

(Testimony of Samuel Barker, Jr.)

Recross-examination.

(By Mr. SHELTON.)

The WITNESS.—What I call the continental fault is a large fissure extending in a north and south direction a short distance east of the ground in controversy in this case. Parallel with that fissure to the west there are a number of small fissures known to exist. Westerly of the ground developed there is quite a stretch of country as yet unexplored. Within that country there may be a great many other parallel fissures. I do not think there may be some larger than the one I call the continental fault, for the reason that to the north of there the operations [618] have been carried on which prove the existence of a larger fault fissure there. For instance, some mining companies that you called my attention to Friday morning. All of the development of those mining companies to the north was in an east and west direction. On the Colusa-Leonard Extension Mining Company's property I do not recall exactly the length of the drift, but it was some two or three hundred feet, as I remember, in an easterly and westerly direction. The existence or nonexistence of a larger fault than our continental fault, running through the ground which lays to the west of the developed ground in the Butte and Boston placer is not absolutely established, although, as I have already said, the work already done is against such a theory. The ground is not absolutely covered, between tunnel 31 and the Pittsmont shaft, but there are other things also, beyond the Butte and London and the Colusa-

(Testimony of Samuel Barker, Jr.)

Leonard Extension. For instance, the Black Rock vein, that can be traced to Silver Bow creek. If there was a north and south fault there it would not necessarily run in a true north and south direction. For instance, we know that the continental fault does not,—that it runs to the northwest. If there were a large fault there and not extended as far north as the Black Rock vein, I should say it would not be as large as the continental fault, because that fault is found in the Butte and Bacorn, which is three miles to the north of the property in question. The Colusa-Leonard does not show any faulting in the ground by north and south faults; the Butte and Bacorn does. I do not know about the Butte and London. Within the developed area on the Butte and Boston placer I know of one fault running in an east and west direction; also one running in a southwesterly and northeasterly direction. It would not be proper to speak of the continental fault and the parallel fissures I refer to as all constituting one fault, [619] because some of the faultings to the west of the continental fault were subsequent to that fault. My reason for saying that is that they dip, some of them quite a little bit, to that continental fault. Some of them might have been occasioned at the same time, but from the evidence that I see in the ground, it is my opinion that some of the faultings now found in this ground were subsequent to the continental faulting. The continental fault, as I know now, dips to the west, and these that I find in the ground are almost vertical, or dipping to the east, toward that

(Testimony of Samuel Barker, Jr.)

faulting. The amount of the dislocation of the vein does not depend on the width of the fault fissure at the surface. There are instances in the district where large fissures divide into a number of small and irregular,—more or less irregular, but comparatively parallel fractures. I would say that about the Rarus fault on its southern extension below the Belmont mine. It might or it might not be that in the ground in controversy in this case, that underneath the surface of the ground there are many fractures that are not parallel to the main continental fault. It would entirely depend on what development showed.

Q. But where you have one large fault and many parallel faults and fractures near it, as is shown upon the Butte and Boston placer, you would expect that the ground within that faulted area would be more or less broken and faulted in other directions beneath the surface, would you not?

A. Well, that is what I have been contending, excepting that I did not call those fracture fault planes or faulting. I said that the ground was faulted in an east and west direction west of the continental fault, which occasioned this greater mineralization that we find here today. All this fracturing beneath the surface might or might not tend to dislocate in [620] different directions any east and west fissures,—vein fissures, that existed there.

In answering Colonel Nolan's question as to the dislocation of a vein by a north and south fault with an easterly dip, the vein having a southerly dip, I

(Testimony of Samuel Barker, Jr.)

assumed all of the time a normal gravity fault. By that I mean—that would be the hanging-wall material along the fault plane had its movement along the incline. In other words: that if the incline is towards the east, that the portion of the country lying to the east of the fault plane descends; that is what I should say was a normal gravity action. I personally only know the dip of the continental fault to the west at one place; but I have made inquiries from other people that have seen it.

Q. What place do you know of your own knowledge?

A. Well, I took that only from the maps I found in my office from the survey of the BIRTHA. That would not be hearsay; I should call that a fact, because when the map was made, there was no intent to deceive anyone. These facts were put on that map. I took it from the stopes that I found on the map. The workings were about fifty feet deep. Such shallow workings might not show correctly the true strike of the fault. I know of instances in veins where they always change the dip and flatten out at the surface. Of course, they generally flatten more than the normal strike would be found underground, but I do not know of them turning over and giving a reverse dip. That, however, would be possible. I have seen the Bi-Metallic vein of granite change its dip from a north dip to a south dip. Assuming that those faults dip to the east, that they are normal gravity faults, why then you would have a piece of country there after the fault had occurred in which

(Testimony of Samuel Barker, Jr.)

there were a succession of downward steps as you went toward the east; as you [621] went toward the west from one fault to the other you would ascend along those steps, and the result would be that you would have a country rising as you went toward the west.

Q. As a matter of fact, you find that the condition is exactly opposite,—that is, that the rise is toward the east instead of toward the west?

A. That is because of the continental fault dipping to the west, which should cause all of the normal conditions.

I cannot tell as to the dip of the uncovered faults; I cannot see in the ground. There is a lateral movement of more or less extent when the vertical movement was being carried on and since that time there might be lateral movements along the fault plane. While the vertical movement might have the effect of dislocating the vein so that the western portion of the vein would be thrown toward the north, there might be such a lateral movement as would entirely counteract that, and throw it to the south; and still have the west wall subsiding in relation to the east wall. In fact, I believe that such lateral motion did occur there. Of course, that is my opinion. No developments have proven that opinion to be correct yet. It sometimes requires extensive development to determine the direction and extent of the dislocation of veins, depending on the amount of throw, or dislocation, as you call it.

I did not observe any drag at any place in the

(Testimony of Samuel Barker, Jr.)

ground in controversy. As I said before, there was only one place that I had a chance of observing whether there would be drag or not, and that was in tunnel 31, but because of the east and west fault there, why the conditions were not clear. If we had the east and west vein, with its north and south faulting, probably then the drag, or the direction of the drag, could be determined; but with the conditions there now, it is impossible to do so. The drag is composed of portions of the original vein that have [622] been pulled along, or dragged along, in the direction of movement occasioned by the fault. In order to prove the absolute continuity of the two pieces of the vein as they originally existed, the drag would be one of the deciding features or characteristics that you would find underground. Of course, for instance, if I were going to do any work on the Butte and Boston placer, the first thing would be to go into the Pittsmont workings, if possible, and find what had occurred there under similar conditions, and which they have now proven. I would first undertake to determine from the deep workings of the Pittsmont the direction and extent of the veins under similar conditions. I have not conducted any such investigations. As the matter stands there, it is purely a matter of conjecture as to the amount and direction of the throw in any particular instance. Of course, I talked with the engineer, and he told me from twelve to twenty feet, but before doing any work, I would have to verify his statements.